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DIRECTIONS FOR WARM AND COLD *SEA-BATHING;* WITH OBSERVATIONS ON THEIR APPLICATION AND EFFECTS IN DIFFERENT DISEASES.

THE SECOND EDITION, ENLARGED.

BY THOMAS REID, M.D. F.A.S.

VERUMQUE EST, AD IPSAM CURANDI RATIONEM NIHIL PLUS
CONFERRE, QUAM EXPERIENTIAM.

CELS. PRÆP. F. 13.

London:

PRINTED FOR T. CADEL, AND W. DAVIES, IN THE STRAND.

1798.

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WILLIAM GODFREY

25 AUGUST 1812

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TO

HENRY DUNCOMBE Esq.

OF EOPGROVE, IN THE COUNTY OF YORK:

THESE SHEETS,

AS A SLIGHT TESTIMONY OF ESTEEM AND REGARD

FOR HIS PUBLIC AND PRIVATE CHARACTER,

ARE RESPECTFULLY INSCRIBED

BY HIS FAITHFUL AND

OBLIGED HUMBLE SERVANT,

THE AUTHOR.

London,

January 1, 1798.

THEATRUM DEUTSCHE AVARIA

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INTRODUCTION.

HAVING passed ten successive summers on the sea coast, at a bathing-place¹ much frequented by company in the season: And in that time, seeing bad effects very frequently succeed to bathing in the sea without proper precaution; I have imagined it might be of some use to warn the public, by laying before them such observations as have occurred to me upon the spot, and from cases under my immediate notice. To the profession these hints may afford some degree of information, as the major part cannot, from their local situation, be supposed to have had

¹ Ramsgate. See Appendix.

an opportunity of seeing this practice; and it is well known that in medicine as well as in politicks, what shall appear theoretically right, may prove practically wrong. Much of novelty they are not to expect, but I presume something may be seen on the application of the warm sea-water bath in œdematos affections and incipient dropfy; which, as far as my reading or experience have gone, I do not recollect having been directed in the cure of that class of diseases.

The cases in which I have had an opportunity of using it with this intention, are not indeed numerous; but its effects are distinctly marked; and I have well-founded hopes that in future trials, the warm sea-water bath will be found a powerful auxiliary to other remedies.

I shall endeavour to collect under one head such directions as are necessary for those

those who bathe in the sea, on account of general impaired health ; whereby I flatter myself, they will not only avoid any bad consequences that might follow, but secure a certain and permanent benefit. I shall then offer such observations as have arisen from my own practice in the application of warm and cold bathing to different diseases, for the relief of which they are usually recommended.

TO THE SECOND EDITION.

SINCE publishing the first impression of the Directions for Warm and Cold Sea-bathing, I have availed myself of every opportunity to continue my observations upon that subject ; and I trust, the action and effects of the warm sea-water bath will be found more minutely, and more usefully explained in many complaints, where it has

has been applied with success. In the section on the nature and quality of sea-water, now added, the reader will find some experiments made by myself, and others drawn from publications, not in the hands of the profession in general. The experiments made to explain the action of warm and cold bathing immediately on the system, it is presumed, may prove more satisfactory than any thing that has been hitherto written upon that head ; their accuracy may be depended upon.

In differing so widely from the common practice, from the opinions of Physicians high in the public estimation, let it be understood, that on this and other occasions, where I have ventured to offer my opinion, it has been done fairly and candidly ; not fearing, as not intending to give offence. My medical existence draws so near its termination, when I shall be equally removed from the pains, the profits, and

and the anxiety of practice, that this may be considered as my last professional testament; wherein I can have no motive, no object in view, but to contribute my mite towards improving a science, in which I have passed the greatest part of my life, and for which I shall always feel an interest.

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DIRECTIONS

DIRECTIONS FOR SEA-BATHING

WARM AND COLD SEA-BATHING.

SECTION I.

GENERAL DIRECTIONS FOR COLD BATHING.

WHEN a remedy is used indiscriminately, it must, of necessity, very frequently be used improperly. This observation can in no instance be so justly applied as in sea-bathing. In this age, of which dissipation and luxury are prominent features, it is become so much and so generally the fashion, for all ranks of people, to make excursions in the summer to the sea-side, that every place is crowded during that season. Unfortunately for many, a general idea has taken possession of the public mind, that if bathing does no good, it cannot do any harm. This is certainly not a fact: cold bathing produces a powerful impression upon the surface of the body, and from thence on

the internal parts ; and although in many diseases an effectual remedy, yet when used without proper precaution, or preparation, frequently occasions dangerous, and sometimes fatal consequences. A celebrated physician has wisely observed, that, " in all things which our art contains, there is nothing that does good but what may also do harm¹." Since it has become the fashion for the great mass of the people to read medical books written expressly for their perusal, every person thinks they are qualified, not only to administer medicine to themselves, but to prescribe for all their acquaintance ; and they will be much offended if not attended to, even in preference to any other advice, however regular. I am very ready to allow, that in the hands of many, such books may be of use, so far as directing simple medicines, until proper advice can be procured ; but I must at the same time be allowed to declare my opinion, that such studies have been the source of infinite harm to the community at large. It is putting active agents

¹ Dr. MEAD.

into

into the hands of those who are incompetent to their management. That this is not a hasty or inconsiderate assertion, I appeal to every medical man's experience.

This being the case, we need not be surprised if people in general plunge into the sea without advice or preparation. In consequence of this, more than inattention, I have often observed young persons, high in health, after using the cold bath for a few times, become pale, languid, lose their strength and appetite, or seized with fevers that have continued long, and in some instances terminate fatally.

The action of cold water upon the human body when frequently applied, may be compared to labour, or any other debilitating cause; and in the first instance, somewhat similar to the rigor that is the leading symptom of fever, producing a spasm upon the extreme vessels². If there happens to be a sufficient degree of strength in the system to counteract the shock of

² "Because, in almost all cases, in which an effort is made by the Vis medicatrix naturæ, a cold fit, and a spasm of the extreme vessels, are almost always the beginning of such an effort."—CULLEN's First Lines, Sec. 42.

the cold water, and produce re-action, a general warm glow will ensue. This re-action rouses the principles of life, or what the learned professor, quoted before, terms the *Vis medicatrix naturæ*, overcomes the spasm on the extreme vessels, and increases the energy of the constitution, of that principle, which in all matter animate and inanimate, is continually labouring for its own preservation. In this manner, I am disposed to conclude, the benefit is produced by cold bathing; and not, as has commonly been supposed, from increasing the tone or spring of the muscular fibre, by the mechanical impulse of the water. Were the good effects produced in this way, they would uniformly follow the application, independent of the state of the vis vitæ; but our experience proves the contrary; for we often see persons persist in bathing, until their strength is so much exhausted that they can scarcely walk up from the sea side.

When the warm glow ³ immediately, or in a very short space of time, succeeds the

³ I am not sure that this term does not express more than I mean, which is a general flush and sense of heat all over the body, enlivening the countenance, and continuing some time.

immersion ; when the spirits are light, and the mind cheerful, the bathing will have a salutary effect. But, after coming out of the water, if they continue cold, chilly, shivering, pale, more or less languid, the body evidently shrunk, and this after several trials, they should desist, nor again attempt bathing until the constitution by proper remedies, is in a state to bear the action of the water, and produce the succeeding warmth so essentially necessary. If the effect of cold water applied to the surface of the body, is similar in some degree, to the first attack of fever, producing a similar re-action of the heart and internal parts, it will be evident how necessary it is to use this powerful agent with caution, and not without being previously ascertained, whether it is adapted to the constitution, strength, or particular disease then existing.

To remove as much as we are able every impediment to salutary vital action, persons of every age, and in almost every complaint, should, before they bathe in cold water, take one or two doses of such purging medicine as may be proper in their particular state of health ; and if their stomach is

disordered, or their tongue not clean, a gentle emetic should even precede the cathartic; it will have the best effect if taken in the morning fasting. These evacuations are indispensably necessary, not only in guarding against fever and other disagreeable consequences, but by emptying the first passages of that fœculent matter which is always lodged in their convolutions; the constitution being relieved from a load more or less oppressing, the vis vitæ is enabled to produce the re-action regularly, and thereby ensure the benefit expected from bathing. In order that this salutary purpose may be secured by every means in our power; during the course of preparation, in most cases I think it highly necessary, that before using the cold water, they should go into the tepid sea-water bath two or three times, at a heat from ninety-two to ninety-five degrees, remaining in it each time from five to twenty minutes, according to circumstances then existing. This will not only purify the surface of the body, but may, at the same time, by means of the absorbent system of vessels, remove any deposition of fluid in any cavity or interstice of the body,

or

or remove obstructions in the excretory or secretory organs, in a manner that will be fully explained, when treating of the effects of warm bathing in the prosecution of this work. It is in very few instances indeed, that this practice can safely be dispensed with.

When their residence is at a moderate distance from the sea, and the person is not very weak, they should walk rather than use a carriage when going to bathe; because the heat of the body before immersion being rather augmented, and the circulation somewhat quickened, will aid the constitution in producing the succeeding warm glow.

The degree of re-action and consequently warm sensation, would seem to depend in great measure upon the relative degree of coldness in the water, compared with the temperature of the body at the time of bathing. I have observed delicate, nervous women, to be less sensible of the warm sensation, after bathing in water some degrees colder than usual. When, therefore, the re-action does not properly succeed the immersion, it may be adviseable for such persons to try the water two or three de-

grees higher, which it commonly acquires by noon in warm weather. Or, they may use the covered bath, which is commonly two degrees warmer than the open sea.

In the action of bathing, it is right that the head should at all times be first in the water, to prevent an accumulation of fluid upon the surface of the brain, and after one plunge to come out as quick as possible; and it is not necessary to be very solicitous in drying the body afterwards, as being wetted with salt water does not occasion indisposition in the manner fresh water usually does, probably from their different action upon the extreme vessels; even the dew that frequently falls very heavy in the evening at the sea-side, is not attended with any bad consequence to those who have been exposed to it. I have not observed any inconvenience to proceed from using varnished silk caps, as is the general custom, but it is better in every respect when they can be dispensed with. After bathing, moderate exercise should be taken, carefully avoiding whatever may fatigue the body, or exhaust the spirits, as that would defeat the intention.

The

The bathing-dresses usually worn, appear to be made of materials too thick and close; if the stuff was thinner and more porous, the action of the water would be more sudden, and stronger on the surface of the body. The form would also be improved were they made open before, like a wrapping gown, and either without sleeves, or with such as are wide and very short.

The custom of bathing early in the morning is certainly very proper, and should not be deviated from without good and sufficient reason; but I observe that the delicate and weakly, especially females who have been in the habit of lying late in bed, are soon fatigued upon rising so much before their usual time: and this perhaps is augmented by waiting some time for their machine; as every one, whatever their rank may be, bathe in the order their names are put down, and for this purpose deputies are not admitted. Such persons will do well in taking a slight breakfast early, and two hours after, they may go into the sea with ease and safety; and as this may be accomplished by ten o'clock, the water, even in the warmest part of our summer, will not have

have acquired a perceptible increase of heat. Previous to their bathing should much exercise be taken, it may so far induce debility, as to prevent, or greatly diminish the succeeding warm sensation, and thereby lessen the good effects of the water.

Having before observed, that the action of cold water upon the surface of the body, when too frequently repeated, produced effects similar to labour, or any other debilitating cause, it will be obvious how necessary caution must be in its application, when the intention is to restore strength to the constitution; and to regulate its frequency, according to the age, strength, and particular circumstances of the patient. The most common practice is to bathe two mornings successively, and omit one; and to take three dips at each bathing. In most cases I apprehend this practice will be found improper. The sudden shock of the cold water rouses the energy of the system; a repetition will not augment, and may probably diminish the effect of the first impression. In proportion as any action on the human body is repeated, in proportion it becomes familiar, and its effects gradually lessen;

lessen ; it being a principle inherent in human nature, and indeed in all animal nature, to become familiar with, and accommodate themselves to the existing circumstances.

" *Ufus frequens omnium magistrorum precepta superat 4.*" In like manner, bathing two days in three, if it does not immediately disagree, will, by its frequency, diminish the influence of the water upon the system, thereby depriving them of that full success they might enjoy, if used with moderation. As far as my experience has extended, bathing alternate mornings, and taking one plunge, is as often as is commonly advisable.

When I said it was right to go into the sea with a slight degree of quickened circulation, and increased warmth of the body, I must not be understood to mean, that those who are heated by previous fatigue, late hours, or intemperance, should bathe in cold water ; in such cases it would be hazardous, and by no means to be attempted.

People of all ages, and in almost every condition of health, are accustomed, when at the sea side, to drink salt water in the morning, under the impression of its being a

⁴ CICER. de Orat. I. 4.

sweetner of the blood, and an antiscorbutic. Salt water taken internally, possesses no quality superior to any other purgative taken in such quantity as will produce similar effects. It is a nauseous, disagreeable potion, often very rough in its operation; and when it does not act, always heats and disorders the body, especially in young children, whom I daily see tormented in this way; and I much wish that I could use any argument to relieve my little friends from this severe discipline. But if it must be swallowed, any thing to the contrary notwithstanding, the addition of an equal quantity of warm milk will ameliorate the taste, and render its action upon the bowels less painful⁵. However this opinion may differ from most of the moderns, an ancient author justifies my assertion. “ Sea water is “ acrid, and moderately heating and drying. “ It is prejudicial to the stomach when “ drank, raises commotions in the belly, “ and brings away phlegm. Being applied “ hot externally, it is drawing and dis-

⁵ The most elegant manner of exhibiting sea-water, is by boiling it with an equal quantity of milk, and straining the clear whey from the curd. It only curdles at the point of boiling.

“ cutient.

“ cutient.⁶” When salt water was first introduced into practice in this country, its drastic effects did not escape observation, “ I have known that sea-water would not purge at all, and then it created very great uneasiness in the stomach, which did not cease until the patient had taken a gentle cathartic. Others who have drank it unadvisedly, have been by its acrimony thrown into almost incurable looseness, and which has sometimes proved fatal⁷.”

On the days of bathing, neither salt-water nor any other purgative should be taken ; because purging universally weakens the powers of the system, which cold bathing is intended to invigorate. As an antiscorbutic or sweetener of the blood, I can only say, no benefit has ever appeared to me, as succeeding taking salt-water with that intention. How far the circulating fluids can be affected by, or be the cause of producing disease, I shall not consider here, having

⁶ “ Aqua marina acris, califactoria mediocreter, desiccans, & pota stomacho quidem contraria est, ventrem autem turbat, pituitamque educit: si calida superfundatur, extrahit & discutit.”—PAUL. AEGINET. Lib. 7. C. 3. Anno 1567.

⁷ Dr. SPEED’s Comment. on Sea Water. Anno 1769.

given

given my sentiments on that subject in a former work ⁸.

The air upon the sea is purer, and more free from noxious effluvia and exhalations, than upon land. This position is proved beyond a possibility of doubt, by seafaring people, who, with proper precautions, suffer less from diseases than any other class of men ; and by a late celebrated and much lamented circumnavigator having lost fewer men respecting his numbers, in a given time, than would have died, during the same period, in the healthiest spot in Europe. The air on the sea coast partakes in an eminent degree of this salubrious quality, provided the soil is dry, free from marshes and stagnant water. The following observations will have a reference to the place where they were made ⁹, than which, there is not a healthier spot in England ; the soil being supported almost intirely by chalk, consequently rather meliorating than injuring the atmosphere. It must at the same time be noted, that the easterly winds, which in the spring of the year are as regular as the trade

⁸ Essay on Phthisis Pulmonalis, 3d Edit. 1798.

⁹ Isle of Thanet. See Append.

winds between the Tropics, blow there with unabated sharpness ; passing over a large expanse of water, they do not meet any thing capable of softening their native keenness. As these winds are experinced to be exceedingly prejudicial to persons labouring under pulmonary complaints, they should not visit that coast before the beginning, or even the middle of July. I have, for many seasons, observed the north-east wind to continue more or les the whole month of June.

Those afflicted with debilitated, nervous constitutions, and from various causes the sensations have acquired such an increased irritability, that cold bathing may either not be suffered, or may be improper, much benefit will be received by moderate walking and riding in the sea air ; always carefully guarding against fatigue.

A late author, in treating upon this subject, has observed, " that sea-bathing derives its efficacy more from the coldnes than the saltiness of the water ; and fresh water is colder than salt water ¹⁰," consequently it ought to have the preference. To demonstrate which is most conducive in

¹⁰ Dr. M. ADAIR's Medical Cautions. 1787.

restoring

restoring health, would be a matter of much difficulty, because it is impossible to determine how far the influence of the sea-air extends; and if the experiment was made at the sea-side, where shall we find two cases exactly similar, or the same person in precisely the similar circumstances at different periods? Independent of the evident good effects of sea-air upon those that do not bathe, I shall not hesitate in giving a decided opinion in favour of salt-water, not only from the salts and other matter contained in it, but that there is probably a very different impression made upon the nerves and extreme vessels on the surface of the body, than what can be occasioned by fresh water when in a state of rest. It may also be presumed that the specific gravity of salt water, exceeding that of fresh water, may considerably augment its action. This opinion would seem to acquire some support from our experience, that sea-water does not occasion rheums and colds when partially applied.

SECTION

SECTION II.

WARM SEA-BATHING.

IN many parts of Asia, particularly in those under the Turkish government, warm baths or bagnios are constantly resorted to, not only as an object of luxury, but as an effectual means of restoring strength and spirits when worn down by labour or fatigue of any kind. That they are not much used in this country, may have proceeded from the very general opinion, that warm water applied for any length of time to the surface of the human body, universally weakens and diminishes the force and action of the muscular fibre, in a manner similar, though in much less degree, as it softens and ultimately dissolves dead animal substances : and, that this debilitating power acts in proportion to the duration of its application. This reasoning is founded on a false analogy, there being no similarity between the two actions. Dead animal substance is softened and ultimately dissolved by readily absorbing and transmitting the fluid in which it is immersed ; but the living animal sub-

stance is not acted upon in this manner, by a moderate application of warm water: and I am warranted by an experience, rather extensive, to state, that a tepid bath, heated from ninety to ninety-six degrees on Fahrenheit's scale, does not relax the body, diminish the strength, or exhaust the spirits after remaining in it from five to thirty minutes, even in persons previously reduced and greatly weakened by disease; and that, on coming out of the bath, they feel themselves refreshed, and their spirits lighter and more cheerful.

In the summer of 1794 I directed the tepid bath every other morning for a lady in the last stage of a decline, and so much reduced in her strength by a great and long-continued discharge from a psoas abscess, as to be barely able, with assistance, to move from one room to another. She began the bath at ninety-two degrees, staid in it at first ten minutes, and afterwards half an hour; and neither during the immersion, nor in the course of the day, found her strength or spirits in the least diminished, which was evident to her friends and attendants. That she should think herself stronger
and

and better, might only proceed from that aptitude of persons in her melancholy situation, to seize with eagerness upon any new ground on which they may erect the flattering and pleasing superstructure of hope, their last and only comfort. The tepid sea-bath was suggested with a view of lessening the discharge and increasing its consistence ; and at first I was disposed to flatter myself, not entirely without success ; but the disease resisted every means of cure, and in a few weeks after, terminated fatally.

Had it been the nature of the tepid bath to relax the body and weaken the general strength, here was a fair opportunity of seeing the effect produced in the clearest and most satisfactory manner.

A bath heated to ninety-three degrees, gives at first a sensation not of actual warmth to the body, when in the usual temperature, because it is five degrees colder than the usual heat of the blood. When taken at a lower degree of heat, it sometimes occasions difficulty of breathing, and faintness. I have imagined that remaining in the bath ten or fifteen minutes may be a sufficient time to act upon the absorbent system ; and

C 2 that

that remaining half an hour or longer, it may in some habits act as a sedative, and occasion langour and faintness. We know that by remaining too long in cold water, or bathing in it too often, occasions an effect very different from a sudden plunge: it is also probable that being immersed a certain time in warm water may invigorate the absorbent system; but when prolonged beyond that period, may induce debility, either by continuing the first action and impression, or by producing the sedative effect in too great a degree. As different constitutions are variously acted upon, the time of remaining in the bath can only be ascertained by attending to its effects; but it is always adviseable to begin with a short period, not exceeding five minutes. The only criterion I can lay down as a general direction, is, when upon coming out of the bath, their strength and spirits are unimpaired, it is a proof that the immersion has not been too long.

The degree of warmth in the water, and the duration of the immersion which I have recommended, probably act upon the system as a sedative, but not so as to debilitate.

tate. This, on mature consideration, will probably appear neither an apparent nor a real contradiction. As a sedative, we find it removes irritability, increased sensibility, and other morbid action in the nervous system, in a manner similar to opium, cicuta, and other medicines of that class, without inducing weakness or debility. The last and best author upon the lymphatic vessels^{*} has observed, that the absorbents are sometimes in a quiescent state, and do not absorb the fluids immediately applied to their extremities. This may be their situation in some degree in dropsy, œdematos swellings of the lower limbs, and other depositions of fluid in the cavities, or cellular membrane. In the prosecution of this subject, cases will be laid before the reader of œdematos swellings of long standing being quickly and perfectly removed by the use of the tepid sea-water bath only, without the aid of any medicine. Is it not reasonable to presume, that in these cases the absorbent vessels were strengthened, their powers of absorption renewed or augmented, and a general healthy action induced in that

* Cruikshanks, p. 158.

system of vessels by means of the tepid sea-water bath? These effects having taken place, the œdematous swellings of the whole body, or only of the lower limbs, from whatever cause proceeding, being removed, health will be restored, and the body consequently invigorated.

The application of the warm bath to cases of œdematous swellings, and incipient dropsy, being in direct opposition to the general method of treating such diseases, I am inclined to think, is a new practice. Critics, upon the first impression of this work, were silent upon this point, of no great importance indeed, although solicited to shew any author in which it had been before recommended. The cases of this kind, in which it has completely succeeded, I trust will convince the reader, not only of its propriety, but justify his adopting the practice in future with the same intention.

Some persons, on first using the warm bath, feel a troublesome itching, tingling, or glowing heat on their skin, but these sensations rarely continue after the second bathing. In others, the breathing is much affected upon first going into the water, which

which commonly soon goes off; but I have known it remain with spasmodic catching of the breath, that the person was obliged to come out after being in only a few minutes. In some the breathing will be perfectly free and undisturbed while they remain at rest in the water, but on moving the body, or even the limbs, the breathing has been immediately disturbed. These symptoms arise from an increased degree of irritability and sensibility in the nerves, and are not to be considered as of any importance; they soon disappear, and rarely return after the second time of bathing. In one case, a sense of weight was felt upon the breast, which did not proceed from the super-incumbent body of water, as the same sensation was perceived when sitting in the bath, and when the water only reached the loins; it continued during the whole course of bathing, which was, although not entirely, yet to a considerable extent successful.

The usual effect of the warm bath immediately on coming out, is feeling light and cheerful, without any increase of animal heat, or quickness of the pulse; yet in some

instances, which indeed rarely occur, it has occasioned head-ach, heat, difficulty of breathing, restlessness, disturbed sleep, and slight delirium. When these symptoms appear, they sufficiently indicate the impropriety of its repetition. During thirteen successive seasons, I have only known two persons so affected, and in one of them the bath was heated to ninety-eight degrees, which probably occasioned the disturbance in the constitution.

When there is an apparent, or suspected defusion of fluids in the cellular membrane or cavities of the body, and the intention of cure is to increase the power or induce a new action in the absorbent vessels, as in the very early stages of drop-sies, in hydro-thorax, hydrocephalus, oedematous swellings of the lower limbs, white swellings of the knees, enlargement of the ovariae, &c. I think the tepid sea-water bath may be tried with a reasonable prospect of success; the age and constitution of the patient, the particular symptoms and circumstances of the case being maturely considered.

Frictions, in most cases, may be used while in the water, with a flesh brush of such strength as can be suffered with perfect ease, always rubbing upwards in the direction of the absorbents ; for, as these vessels in the extremities lye superficially, by this method their contents are more effectually propelled than could be done in the old manner of moving up and down alternately ; by friction also their muscular fibres are stimulated, and a more powerful action excited : whoever attends to this circumstance, trifling as it may appear, will not find his time thrown away.

Delicate weakly people, in whom the natural strength is deficient, and the digestive organs do not perform their functions properly, and adequate to the nourishment of the body, will receive benefit, and be enabled better to bear the warm bath by taking, during the immersion, a basin of clear beef-tea, veal, chicken or mutton broth, made palatable. The ancients bathed in cock broth, with the intention of becoming fat and fleshy. In cases of great debility, where it may be advisable to use the warm bath, they will be able to support it a longer time
with-

26. DIRECTIONS FOR WARM [Sect. II.

without inconvenience, by taking a cupful of wine and water, equal parts, brewed with an egg, and made milk warm.

Although the warm bath is very commonly used in the morning, or any time of the day, without inconvenience or taking cold, yet I would advise the delicate and sickly, and in this class women in general are included, to use it in the evening, and go home in a chair, because they are apt to suffer from variable weather if they go out after bathing. They should also be careful not to use much exercise, or agitation of the mind, previous to going into the bath, as in that case they are apt to be languid after it; the hurry of dressing, or visiting, more than bodily exercise, is what is meant to be guarded against by this caution.

The frequency of using the bath must be regulated by the nature of the disease; the age, strength, and other circumstances attending the patient. When the symptoms are urgent, they may go in every day, but in general I find every other day sufficient.

SECTION

SECTION III.

GENERAL WEAKNESS.

WHEN the constitution is greatly injured, and a state of debility of the general habit induced, either by previous illness, intemperance, late hours, irregularity in diet, exercise, or the passions of the mind, cold sea-bathing has been experienced to produce very considerable advantage, when pursued under proper restrictions. It becomes a matter of importance in these cases to consider if the remaining strength is sufficient to bear the shock of the water, and cause the re-action of the system, and consequent warm sensation. Previous to any trial of the water the first passages should be perfectly emptied of the mass of fæculent matter always lodged in them, more especially, in weakened habits, where the functions of nature are slowly performed. The liver and biliary organs require strict attention, particularly in those of a sedentary life, in whom this organ is frequently found more or less disordered. These cautions being duly observed, and while they

they are taking exercise in the sea air for a few days, I usually direct the tepid bath to be taken two or three times, heated from ninety-two to ninety-five degrees, and to have their limbs well rubbed with a flesh-brush during the immersion. This may be done at such time of the day as is most convenient; there being no intention of exciting perspiration, additional cloathing or immediately going to bed are not necessary; but they should avoid being exposed to cold winds, rain, or moisture. By pursuing these means, for a week or two, persons in such circumstances may use the cold bath with advantage. At first they should only go in twice a week, and after some time, every other morning, either before or after breakfast, as may be most convenient. In the course of bathing such tonic medicines as are adapted to the case may be taken; exercise on horseback, double or single, is peculiarly applicable, as it induces them to be in the open air, without fatigue, or exhausting the spirits. During my long attendance at the sea side, many of these cases have come under my notice; and I have observed

more

more of them to be the consequence of late hours, of the absurd fashion of sitting up all night and lying in bed all day, than of any other cause, or indeed of all causes combined. It is my duty to point out the pernicious effects of this conduct, and to assure the votaries of pleasure, the slaves of dissipation, that the loss of health is as inevitable as the ruin of their fortune.

Delicate weakly women, who may have suffered from frequent miscarriages, and the long train of complaints consequent to such accidents, will not be disappointed in their expectations of relief from cold sea bathing; with the proper precautions it commonly produces manifest and permanent benefits. Those who have frequently experienced this casualty, should continue the use of the bath until their pregnancy is far advanced; provided it can be done without any alarm, and being in itself perfectly agreeable to their feelings.

SECTION

SECTION IV.

In the following sections briefs will be given
you to make your breed begin

SCROPHULA.

SINCE the period when sea bathing was first introduced to the public notice in this country ¹, and especially used in this obstinate disease, those afflicted with it have been constant attendants at the sea side. I have known very many bathe for several months, season after season, and I am concerned to say, with no great effect upon the particular complaint, or diseased part. So far as it mends the general health it is of service, but I speak of curing the disease with sea water as a specific, of resolving the swelled and indurated glands by its internal or external application, of which I have indeed rarely seen an instance. Scrophulous tumours about the neck in young persons, when not very large, have been sensibly diminished by the use of the tepid salt water bath ; but the difficulty of persuading patients to persevere in this process is almost insurmountable ; the universal opinion being,

¹ Dr. Russel published on this subject at Oxford,
An. 1753.

that

that bathing in the sea is a specific for the scrophula. Nothing but the strong sense I feel of that duty, which every one owes the public who presumes to offer information upon any subject, more especially medical, could have prevailed on me to subtract, however little, from the balm of hope enjoyed by persons in that distressing situation.

The father of this practice (Dr. Russel) did not attempt to cure the scrophula by the means of sea bathing alone. He gave preparations of mercury, antimony, sulphur, millipedes, &c. and kept the bowels open by drinking salt water in the morning. In some cases he used the warm bath with success, and very generally applied warm fomentations of salt water to the swelled glands. When by such medicines he had nearly dispersed the tumours, he directed sea bathing as a general tonic. His great dependence was upon keeping up a continual irritation on the intestines by giving a pint of salt water every morning for many months.
“ And by these means (the alterative medicine) the tumours were dispersed by degrees. Towards the end of their dissipation

"
" tion I ordered his neck and parts affected
" to be rubbed with qurcus marina (sea
" wreck) newly taken out of the sea, and
" moistened with its native soap; and thus
" the tumours disappeared intirely. *Then*
" continuing to drink sea water for three
" months, I ordered him the cold bath :."

" In three months space the tumours of
" the glands disappeared, and *towards the*
" *end*, by bathing in the sea, the patient
" was restored to health ^{3.}"

" When the patient had taken sea water,
" with alteratives for two months, he went
" away cured, bathing in the sea at the
" latter end of the time 4.

" Towards the end of the cure, gall nuts,
" peruvian bark, and the cold bathing in
" the sea may be properly prescribed 5."

Children of all ages, before puberty, are subject to have the lymphatic glands of the neck, and under the chin swelled and enlarged without pain or tendency to suppuration. Although this complaint may not with strict propriety be termed scrophulous, yet when it is of long standing, and the glands,

² Ruffel on Sea Water, p. 51. 1769.

³ Ibid p. 66. ⁴ Ibid p. 66. ⁵ Ibid p. 91.

indurated,

indurated, I suspect it must be a branch of the same family, and removeable only by a similar mode of treatment. In such cases a course of warm bathing with such deobstruent medicines as the constitution can bear, should always precede cold bathing.

When the internal glands of the throat are so enlarged as to affect the voice they will sometimes be aggravated by cold bathing. An instance of this kind occurred to me in the summer of 1795. A delicate boy of nine years of age, had bathed in the sea sometime, for swelled tonsils, without benefit. By my direction he used the tepid bath every evening, and took a preparation of calomel and antimony, with a common opening mixture occasionally; by these means the glands were much reduced, and the cold bath completed the cure.

A considerable advantage, peculiar to the warm bath, in this disease is, that medicines, however active and powerful, and from which only we can expect permanent relief, may be taken safely and without interruption, which cannot be prudently done even in the intervals of cold bathing. The chief seat of this disease being in the

lymphatic glands, if the warm sea-bath acts upon that system, by increasing, or renewing the power of absorption, as I have endeavoured to explain, may not much benefit be reasonably expected from persevering in its use for a length of time ?

The best deobstruent we are acquainted with is mercury, and the only one we can depend upon in this and many other diseases ; the most efficacious manner of exhibiting it is, by rubbing the diseased part with Ung. Hydrargyr. after having been well bathed or fomented with warm sea-water, or where that cannot be procured, with water made equally salt. To prevent the mouth being affected by the mineral, and to stimulate the absorbents of the intestines, such a quantity of the sal cathart. amar. may be taken in the morning, as will operate twice every day. The part should be kept warm, and the course continued until the swelling is dispersed or nearly so.

Perhaps, among the various means that art employs in the cure of chronic diseases, none is so powerful as abstinence, when to a certain extent, and continued a sufficient length of time. It affords greater and more

salutary

salutary effects than any class of medicines, or method of treatment we are acquainted with. The case of Wood, the miller of Billirica, in Essex, that was published some years ago, from high medical authority; and another instance that has lately happened, well known to many persons, are so extraordinary, that nothing could render them credible but the incontrovertible evidence by which they are accompanied.

A gentleman, of great respectability in the mercantile world, who weighed thirty-two stone nine pounds, put himself upon a strict diet of *four ounces of animal food, six ounces of bread, and two pounds of liquid* in twenty four hours. In one week he lost thirty pounds weight, and in six months he was diminished the astonishing quantity of one hundred and thirty four pounds. His health and spirits were much improved, and considering his remaining size of twenty-three stone, was very active⁶. The chief

⁶ I had this account from himself, August 27th, 1791; at Christmas 1794 I saw him, improved in his health, and not apparently increased in size, although he returned nearly to his former diet. July 31st, 1797, I am informed he continues well.

part of this vast consumption of fat and fluid, was performed by means of the absorbent system, with the powers of which we have of late become better acquainted, and more able to direct its operations. A plan of this kind, continued a sufficient time, and pursued with a similar degree of strictness, might have a good effect in the higher stage of scrophulous complaints; in aid of which the tepid sea-water bath would be very properly applied. Indeed, when there is a certain degree of strength in the constitution, I presume there are but few chronic diseases that could resist such a course, pursued with unremitting constancy.

“ *Solaque abstinentia fine ulla pericula medeatur ?* ”

If sea-air and sea-water were really so efficacious in the cure of this disease, as we are persuaded to believe, and as the public opinion declares, we might expect that the inhabitants of sea-port towns would be, at least, exempt from its ravages: on the contrary, we are informed by a respectable

⁷ CELS. lib. 3. cap. 2.

author on this subject, and who was perfectly competent from his situation to determine, that the inhabitants of some places on the sea-coast are peculiarly obnoxious to scrophula. “ The inference to be drawn from these remarks is, that if sea-water and sea-air were such specifics, surely the scrophula would be far less formidable at Lynn than in any of the inland towns; but it is a melancholy truth, that it is not so! And from long observation I am rather inclined to think that it is really more severe and distressing ⁸. ” Although in this instance local causes may have some influence upon the health of the inhabitants, yet it proves, to almost a demonstration, that the scrophula can neither be prevented nor cured by constantly living in the sea-air, and from infancy being in the habit of bathing. When any amendment has been perceived, it probably was produced by the alteration in the general health, from the sea-air and exercise, increasing the appetite, and aiding digestion. Sometimes, and not unfrequently,

⁸ Dr. HAMILTON’s Obs. on Scroph. An. 1791. p. 161.

the disease is observed to disappear spontaneously in young persons, especially females, at a certain period. "Patet hoc lu-
"culentius, qua juvenis coelebes frequenter
"strumosi fiunt postea verò matrimonio
"conjuncti, nonumquam sponte curantur.
"Nempe materia olim, ad strumas fluens,
"ad alias jam partes divertitur ?."

It is far from my intention to deter the scrophulous from visiting the sea-side, because I am persuaded they cannot pursue a better plan to aid their general health, an object of great importance at all times, and in every situation; but it is right they should be informed, that by trusting entirely to cold bathing, they deprive themselves of that assistance which might be drawn from medicines of great activity and efficacy. Nor is it to be understood that I mean to exclude bathing in the sea, from the treatment of the disease; but I admit it only as an auxiliary, not as the principal agent in the cure. When by the use of deobstruent medicines, either mercury, antimony, or

⁹ WHARTON de Glandulis, p. 247.

sulphur, variously combined with alkaline salts, assisted by the warm bath, the tumid glands are softened, and in a great measure dispersed, the digestive powers strengthened, the hardness and fulness of the abdomen perfectly removed, and a free and natural discharge procured, then, and not till then, I presume the cold sea-bath is a fit and proper application; and will, when conducted with the requisite caution, strengthen the constitution, and promote the final resolution of the glandular swellings. As far as experience has made me competent to form a decided opinion upon this subject, it has appeared to the full conviction of my mind, that the cold sea-water bath acts merely as a tonic, and that there is no specific virtue in the water, considered as a fluid, when applied to the surface of the body.

The old practice of rubbing glandular swellings with the glary fluid contained in the pods of the quercus marina, or seawreck, is not yet intirely exploded. From its application I have not observed any good effects; nor indeed is it to be expected that such viscid fluids should be taken up by the absorbents upon the skin, or have

D 4 any

any influence upon those indolent tumours. When relief has been supposed to follow this, and many other external remedies, it has probably arisen from the repeated frictions stimulating the absorbents of the part to a more vigorous action. Trifling causes sometimes produce considerable effects. Scrophulous swellings of the glands, when not large or tending to suppuration, if stroked gently with the hand, so as to give no uneasiness, many times in a day, in the direction of the fluid in the lymphatic vessel, will frequently be diminished, and sometimes entirely dispersed: to prevent the skin becoming tender, some unctuous body should intervene; perhaps olive oil is as proper as any thing. If the part is within the reach of the patient, their own hand is the most proper. The Hindoos, I am informed, are famous for applying frictions, which they call shampooing; and it is, independent of medical intention, considered even by Europeans as a great luxury after fatigue. I cannot resist quoting the sentiments of my old professor and friend upon this subject:—“ There are few reme-
“ dies of greater service in obstructions of
“ the

" the indolent and cold kind, than gentle
" frictions. It not only promotes the cir-
" culation through the small vessels, but
" tends to attenuate and increase the ab-
" sorption of the matter stagnating in the
" follicles, or extravasated in the spaces of
" the cellular membrane of the obstructed
" part. I have had instances of incysted
" tumors cured by long-continued frictions
" alone. One was on the upper eye-lid,
" about the size of a common cherry, and
" of the steatomatous kind. Another was
" situated in the membrana adiposa on the
" left side of the abdomen; it was bigger
" than one's fist, and felt like the steatomas
" or atheromas. It was treated with no-
" thing but frictions of the part twice a day,
" with oleum camphoratum. For the first
" four months it did not seem to yield;
" but soon after it began to lessen, and went
" off very fast. The tumor on the eye-lid
" was rubbed only with the saliva ¹⁰."

Those afflicted with this disease when at
the sea, very generally drink salt water,

¹⁰ Dr. WHYTT's Works, p. 669. Anno 1768.

under the impression of its being a deobstruent, pervading and scowering obstructed glands. I have before observed, that it appears to possess no virtue, but merely as a cathartic, and that not of the mildest kind. "I look upon the good effects of sea-water in glandular swellings to be chiefly owing to its purging quality. When it does not prove laxative, but makes the patient thirsty and hot, no good is to be expected from it."¹¹

A long-continued irritation on the intestinal canal, exciting to an increased discharge of its contents, will, without doubt, make a powerful revulsion from the lymphatics in other parts of the body, by some means of communication between those vessels, which I cannot account for, thereby aiding the resolution of glandular swellings; and whether this is meant to be the principal effort against the disease, or only an accessory to other medicines, and to prevent a mercurial course affecting the mouth, a proper quantity of common purging salt

¹¹ Dr. WHYTT's Works, p. 670.

taken in the morning, will answer the intention with more ease to the patient, and to a greater certainty, than sea-water. But if, after all I have said, custom and public opinion, should, as they most commonly do, prevail, and salt water is preferred to any other purgative, be it so; only let me caution the patient not to be disappointed, should his success not be in proportion to his expectation.

As in scrophulous habits the glands of the mesentery, and other internal parts, always partake of the original disease, it will be highly necessary to attend to this circumstance before they are suffered to use the cold bath.

SECTION V.

ERUPTIONS.

ERUPTIVE complaints on the surface of the body are so various, and for the most part so indistinctly defined, that it is difficult to mark with precision those on which cold bathing promises relief. It will be easier, and of more general use, to say, in what disorders of this kind the application is improper. And as there is no class of disorders in which cold sea-bathing has been so universally recommended, even by the first rank of the profession; I fear I shall require all the reader's patience and candour, whilst I differ so essentially from the general opinion and practice.

In every species of Erysipelas and herpes, as they always are in some degree inflammatory, cold bathing acts as a repellent, forcing that matter on some internal part, which the vigor of the constitution has thrown upon the surface; therefore is highly improper.

In

In the Itch, although very commonly used, I have not known it produce any amendment.

The Leprosy, dry or moist, not having come under my inspection, I cannot say what its effects might be ; but, reasoning from analogy, more is to be expected from a course of warm sea-bathing.

In the small eruptions with inflamed bases, and pointed heads, that break out thick all over the body, and sometimes itch so violently as to prevent sleeping, cold bathing is very generally recommended, but not with any advantage, as I have perceived. In a case of this kind, in which the bathing had been continued a fortnight, and the itching by its use much aggravated, the warm bath gave immediate relief, and, in a short time, removed every appearance of the complaint.

Young people of both sexes, from the age of fourteen to twenty, are subject to eruptions of pimples, not very small, in the face, and sometimes, but rarely, on the breast, but not on any other part of the body ; it is attended with no itching or uneasiness, but the appearance is disagreeable. It is

known

known by the common name of Surfeit, and generally accounted for, from drinking cold liquor when the body has been heated by exercise. A young person had this complaint to a violent degree, her face being almost covered by the eruption. The cold sea-bath had been pursued assiduously for several weeks, and she had taken in that time a large quantity of alterative diet-drink, by way of sweetening her blood, without the smallest alteration for the better. I directed her to use the tepid bath every evening, to rub her face, going to bed, with soft pomatum, and to take a preparation of calomel and antimony. In a short time the eruption disappeared, leaving only stains upon the skin, which soon wore away.— Another case of this kind, which came under my care, in my annual visit to the sea-side, in which the face was only partially affected, but always the same place, under the eyes and on the upper part of the cheeks ; it had continued more or less several years, and as usual was termed a surfeit. The same plan, was pursued, and with similar good effects ; but it required a longer time, six weeks or two months. She bathed three or

four times a week, and while in, kept washing her face with the water.

When the complaint is on the decline, and the eruptions are nearly level with the skin, considering it then as a local complaint, and which I am disposed to think it sometimes is, ab initio, I direct the Decoctum Hellebori albi of the London Dispensatory to be used as a Lotion going to rest; but this must be done with caution.

In the dry, red, scurfy eruption, commonly called scorbutick, without itching, that breaks out principally on the hands and arms, sometimes also on the legs, in spots of various dimensions, from the size of a barley corn, to that of a shilling, and often much larger. This complaint usually appears in spring and autumn, in persons of middle and advanced age, sometimes though rarely in young persons, without any disorder in the general habit. It is very apt to return at the same periods annually in those advanced in age, and in some continues through life; in such cases, all that art can do, is to moderate its violence, and shorten the duration of its periods. For this purpose, the warm salt water bath is highly efficacious.

efficacious, and in young subjects frequently removes the disorder intirely. After the disappearance of the eruption, the cold bath may be used with advantage as a general bracer.

In eruptive complaints, when the general health is not injured, and the stomach performs its functions regularly, I usually direct small doses of Calomel and antimonium Tartarifatum, or Sulph. ant. precipit. in the manner of Plumber's pill, going to bed, and continue the medicine during the time they are using the warm bath; should it be necessary, some gentle aperient medicine may be taken in the morning, to keep the bowels regular. My intention is not to sweeten or alter the quality of the blood, which I believe has no concern in causing, or continuing the complaint; but to stimulate the lymphatics of the intestines, and through them to act upon those of the other parts of the body. To an adult I begin with Cal. gr. ij. and Antim. Tart. gr. $\frac{1}{4}$, but the dose must be varied according to the age, sex, and condition of the patient, and which the medical attendant will find no difficulty to proportionate. When the itching is very troublesome, the Hyd $\ddot{\text{a}}$ rargyrus cum Sulphure,

phure, with a sufficient quantity of Rhubarb, will have a better effect than Cal. particularly where the bowels are easily acted upon. Should there appear a disposition to heat, a few grains of purified Nitre may be added to each dose of the medicine.

It is very necessary, in every species of eruptive complaints, to be attentive to the diet, as it will be perceived that those affecting the face will be more inflamed after dinner. All high-seasoned, stimulating food should be banished the table; and, if it can be complied with, no strong liquor of any kind should be drank; small-beer, toast and water, lemon or orange whey, will properly supply their place. Whatever heats the body and accelerates the circulation, will increase the inflammation or redness of the eruptions, protract their continuance, and render the cure more difficult.

SECTION VI.

INTERMITTING FEVERS.

WHEN the constitution has been much reduced by the long continuance or frequent recurrence of intermitting fevers, the cold sea-bath will afford considerable relief, aided by moderate exercise in the open air by the sea-side. After diseases of this kind have been of long duration, the abdominal viscera are more or less affected, which requires particular attention. If the surface of the body, or whites of the eyes are tinged with yellow, or the urine high coloured, there is reason to suspect obstructions in the liver and biliary vessels: until these symptoms are removed by appropriate medicines, and the use of the warm bath, if necessary, the patient must not attempt cold bathing. In our general practice we find, that when intermitting fevers resist the usual means of cure, supposing the liver, or other internal parts are diseased, by giving medicines with this intention, the disorder yields to such tonics, as before, only afforded a

tem-

temporary relief. After agues of long standing, especially quartans, the lower extremities are apt to become oedematous, and other symptoms of incipient dropsy appears; as soon as such a tendency is perceived, recourse should be had to the warm salt water bath, which in most cases, proves an effectual application; where that cannot be procured, water made equally salt may be used as a substitute.

SECTION VII.

GOUT AND RHEUMATISM.

IN this disease, it will be unnecessary to say, that cold bathing can only be used in the interval between the fits. When the appetite and strength have been much impaired, and the lower limbs debilitated by a long continuance of pain, the sea-air will be found an excellent restorative, even when the constitution is much broken; such exercise being taken, as the strength can support without fatigue, especially on horse-

back. But cold bathing requires great caution, and should only be attempted at some distance from the termination of the last fit, and when there are no remains of pain in the limbs: when used too soon, before the strength is restored to such a degree as to resist the impression of the water, and effect the reaction, the pain is very apt to return irregularly, and harass the patient without fixing in any particular part. Indeed, in the course of my practice, I have very rarely found it advisable to use cold bathing in this severe disease. In cases where it is to be attempted, the warm sea-water bath should be taken several times as a preparative.

When after repeated fits, the joints are left stiff, their motion impeded, and disposed to enlarge, a course of warm sea-bathing, with moderate, but continued frictions, will afford very considerable relief.

In the irregular and wandering gout, when the strength is not sufficient to expel the morbid matter to the extremities, the warm sea-water bath heated from ninety-five to one hundred degrees, will be found conducive to this desirable purpose; whilst

exer-

exercise in the sea-air will strengthen and invigorate the constitution. Cold bathing is not advisable in this state of health, unless the intervals are long and distinct. By the action of the cold water, the gouty matter may be fixed upon the viscera of the abdomen, the stomach or brain, and there prove more dangerous and difficult to remove. Such medicines as strengthen the stomach and aid digestion will be properly directed; and the alvine discharge, which is apt to be sluggish and confined, may be regulated by warm, bitter purgatives, taken occasionally.

The only species of Rheumatism, in the cure of which the cold bath comes in contemplation, is the Chronic; and in that, the foregoing observations will apply with equal propriety. The patient should not be persuaded to go into the sea, except in the period of perfect ease. When there is any pain in the limbs or back, wandering and frequently recurring in the night, although cold bathing is often advised in such cases, yet the practice will be found, on experience, to be extremely hazardous: by the action of the cold water, the pain is

sometimes fixed, more particularly in the loins and back. This effect may not take place immediately; but, in a short time after bathing under such circumstances, I have known the pain, in several instances, to return with increased violence.

As a general remedy, the warm bath will afford considerable relief, and very frequently removes the complaint altogether; but in some instances it will fail; from what cause I cannot determine.

In the chronic Rheumatism, while the patient is using the warm bath, I generally direct them to take, going to bed every night, a pill with Cal. gr. ii. Opii gr. i. Pulv. Rhei gr. v. Tinct Rhab. q. s. It produces perspiration, and keeps the bowels open; if it fails in that respect, some aperient med. may be taken in the morning for that purpose; and once or twice a week they may take a purgative that will act three or four times smartly. The dose of the pill must be adapted to the age, sex and strength of the patient. In obstinate cases, that do not readily yield to this treatment, the Pulv. Ipecac. Com. by determining more powerfully to the skin, will often

often have a good effect ; it will procure sleep when every other preparation of opium has failed.

In irregular rheumatic affection, when the pain is not fixed nor constantly returning to the same part, it is not uncommon to find the symptoms aggravated after the first or second time of warm bathing ; but if there are no other reasons to desist, the patient should persevere in its use.

SECTION VIII.

INFLAMMATORY COMPLAINTS.

I Have observed, with few exceptions, that persons of a full habit of body, and who by their peculiar constitution are subject to disorders of an inflammatory nature, upon using the cold sea-bath, even after due preparation, either find it actively disagree with them, deranging the functions, and interrupting some process of nature ; or they find no benefit at the present, or in future. This would seem to support the theory of

the effect of cold bathing, mentioned in the first section, namely, the calling forth the energy of the system, augmenting and strengthening the force and action of the muscular fibre ; in which, those of the inflammatory diathesis are not deficient.

In some, violent head-achs have succeeded bathing ; in others, giddiness, apoplexy, palsy. Sometimes and not unfrequently, fevers of long duration and difficult cure, have followed so immediately, that no doubt could remain of their proximate cause : they have commonly been observed in young persons, of a full habit, florid complexion, and who, in full health, have neglected those precautions I have been labouring to recommend in the foregoing sections.

Children are subject to eruptions after bathing, that continue long and are not easily removed ; they appear principally in the face and about the neck, are moist, itching, painful, and form disagreeable scabs. The health being impaired proves that it is not thrown out, by the constitution being strengthened : the bathing should be discontinued, as it would increase the complaint.

Weak-

Weakness and inflammation of the eyes are very often local complaints, although excited and augmented by whatever heats or irritates the habit. Such cases frequently occur at the sea-side, and bathing, that universal remedy, applied ; but I have not observed any benefit from it, even when long continued.

It will scarcely be necessary to enter my caveat against sea-bathing in every stage and species of Phthisis Pulmonalis, or consumption of the lungs ; and yet, as bark, wine and animal food, have been by many late authors recommended, cold bathing would only be following up their intention. In my opinion they are equally improper, and if persisted in, the consequences will soon be evident to the slightest observation.

In every complaint of the breast, attended with pain, cough, spitting of blood (I have seen a young man spitting blood, bathing in the sea, by the first medical advice in this country, I need not say with what effect) asthma or difficulty of breathing, however strongly sea-bathing may be recommended on the idea of strengthening the habit, I must in the most earnest manner protest against

against its admission. When the summer is advanced, and the easterly winds no longer blow, relief may be found in many of these affections of the breast, from gentle exercise in the sea-air, and from sailing on the sea, where it can be done with perfect ease to the mind; as to sea-fickness, that will be very conducive to the cure. At other times of the year, Devonshire and Cornwall offer many stations where the air is mild, and better adapted to diseases of the lungs than the East coast of Kent. But as this subject is foreign to the present work, I shall not further enlarge upon it here, but refer the reader to my sentiments at large in a former publication ¹.

¹ Essay on Phthisis Pulmonalis, 3d Edition, 1798.

SECTION IX.

CHLOROSIS.

YOUNG women about the age of thirteen, in some sooner, in some later, from the change taking place in their constitutions, are very apt to become unhealthy. They lose their colour, their countenance is of a yellow, pale hue, are languid and not disposed to motion, contrary to their usual custom; their flesh, strength and spirits decay. They are subject to nausea, sometimes pain in the stomach, with little appetite, and that irregular and often depraved. On using exercise they are soon fatigued, and complain of pain in their back and legs with shortness and difficulty of breathing when they ascend any acclivity. The lower limbs frequently become œdematosus towards night, retaining the impression of the finger, and not always subsiding before morning. The alvine discharge is irregular, sluggish, generally confined, and the abdomen will be found in most cases enlarged

enlarged and tense, with some degree of deep-seated pain upon being pressed.

The origin of this, very common disorder, would seem to be principally in the stomach. That organ, from some inexplicable cause, probably influenced by the state of the uterus at that period, is so changed in its power of internal secretion, as to be incapable of properly digesting the food; hence, the body not being nourished sufficiently, a state of debility gradually comes on, with a depraved quality of the secretions. The blood becomes thin and watery, having a less proportion of the colouring particles than nature requires. The bile¹ is either secreted in a less quantity, or it is deficient in quality, so that the intestines not being regularly stimulated to the expulsion of their contents, constipation to a

¹ "I am persuaded, however, that in Chlorotic habits
"the bile is more insipid, is secreted in less quantity, and
"of a more pale colour than in health. This imperfect
"state is perhaps in common to all other secretions of
"Chlorotic subjects, and may possibly arise from the
"watery state of the blood, the paucity of red particles,
"and the defective energy of the whole system."—
Dr. WM. SAUNDERS on the Liver, p. 161. Anno 1793.

certain

certain degree frequently takes place, until the retained matter, becoming acrid, works its own discharge by a temporary looseness.

In a late publication ² this disease is supposed to be frequently occasioned by wearing tight bandages, as was formerly used in female drefs, and to the want of sufficient air and exercise. Was the disease peculiar to persons in the middle and higher ranks of life, and, as this author thinks peculiar to boarding schools, and other seminaries of that kind, such causes might seem reasonably assigned. But we do not find this to be the case; the disease is observed in every station; and at the sea-port town where I spend my summers, it is very common, more particularly among the lower clafs, among those who get their bread by daily labour; and therefore air and exercise are freely enjoyed, and they are not tight laced.

There is no complaint in which cold sea-bathing is so universally recommended, as in

² Hints on the Chlorosis of Boarding Schools. 1795.

every stage of Chlorosis, and very often with the wished for success; change of air and moderate exercise being peculiarly well adapted to such cases. But before it is attempted, the caution so often repeated must be carefully observed; whether a sufficient degree of energy is present in the system to bear the shock of the water and produce the reaction, and succeeding warm sensation. Of the many Chlorotic cases that have come under my notice, of late years, it may be with truth affirmed, that scarcely half of them have been relieved by bathing, even when continued a considerable time³. When the strength is much reduced, the countenance pale and bloated, the lower limbs œdematosus, retaining the impression, bath-

³ In the summer of 1794, Miss M—— was brought from Margate for my advice. She was tall and full grown at eighteen, had never been regular; was pale and languid, her lower limbs œdematosus, and although so weak as to be incapable of walking from the machine, had for some time used cold bathing. Her tongue was yellow and foul; had sickness and pain at her stomach, with loss of appetite. By pursuing the plan here recommended, in a short time the symptoms abated, and there was every appearance of returning health.

ing in the sea is not advisable, for the reasons already given when treating of general debility.

The usual treatment of Chlorosis in the advanced stage, being, if not entirely inefficacious, yet slow and tedious; I have for some years past deviated from the beaten tract, and attempted a different course, not, I flatter myself, without success. I begin by washing out the stomach, and agitating the system by a gentle emetic taken in the morning fasting, and repeated once or twice a week, as the urgency of the symptoms may indicate; this is directed, not so much with respect to evacuating the contents of the stomach, which although sometimes loaded with phlegm and bilious matter, yet in common contains only mucus and some acid fluid, as it is intended to act immediately upon the secretory organs of the stomach, inducing a secretion of more healthy juices, and ultimately by the concussion, to rouse and invigorate the energy of the system ⁴. Bitter cathartics with small doses

⁴ "Sea sickness, and sea voyages, contribute very much to restore the secretion of healthy bile, so necessary to "the

doses of calomel are taken every night going to bed, so as to keep the bowels regularly open, and by slow, gentle, but continued action, to reduce the tension of the abdomen, always more or less present. During the time these remedies are exhibited, the warm sea-water bath is used every night, or three times a week, remaining in it as long as they can bear, without affecting their strength or spirits; and during the immersion to apply gentle frictions to the lower limbs in the direction of the lymphatics. As the strength in these cases can only be estimated by experience, it is right to remain in the bath at first, not more than five minutes, gradually prolonging the time to half an hour.

Exercise on horseback proportionate to the strength, sailing on the sea in fine weather, moderate dancing, cheerful company and amusements, are very conducive

" the welfare of the animal œconomy; and symptoms of
" dyspepsia and diminished secretion, which are now
" rendered more conspicuous among females from their
" sedentary life, are most effectually removed by the
" means already suggested."—Dr. WM. SAUNDERS on
the Liver, p. 167. 1795.

to returning health, and to that change in the system which is naturally, and ought to be patiently expected. To this plan may be connected such tonics as may be advisable ; composed of bitters, Myrrh, Ferri Rubigo, Ferrum Vitriolatum, Zincum Vitriolatum, Cortex peruv. Cort. Angustura, &c.

When by these means, they have acquired additional strength, and their countenance gives sign of returning health, by its colour and freshnes, when the appetite is restored, and the digestion of food is without uneasiness; when the œdematos swellings of the limbs are intirely subsided, then, and not till then, the cold sea-bath may be attempted with a prospect of permanent benefit ; but if after two or three trials, the warm glow does not succeed fully and distinctly, it must be discontinued until by the former plan the strength is further augmented.

As cold bathing is very generally esteemed a luxury, young people, if not carefully attended, are apt to indulge themselves to their prejudice. They are disposed not only to use it too frequently, but in warm weather,

when left to themselves, stay longer in the water than is salutary ; thereby weakening the first impression on the habit, and preventing the benefit they might reasonably expect.

SECTION X.

ŒDEMATOUS AFFECTIONS.

IN my observations on the subject of the last section, I slightly mentioned the œdematous swelling of the lower limbs, which, although very generally accompanying that state of health, is not necessarily occasioned by it. On the other hand, a cessation, or an irregularity of the monthly periods, is a general symptom attending œdematous affections, as it is upon every disease inducing a certain degree of debility. In these it is a consequence of the particular complaint ; in the former it is the proximate cause, or closely connected with it.

Into every cavity of the body, every interstice of muscular fibres, every follicle of the cellular membrane, the exhalent vessels

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continually exude a fluid, serving principally to moisten and lubricate their surfaces, in order that every part may move upon another without pain, friction, or impediment. This purpose being answered, the absorbent system of vessels take up the superabundant moisture, and convey it into the circulation; or what is more probable, excrete it from the body by the different emunctories, thereby preventing any accumulation dangerous to health. But if from a too large quantity of fluid being secreted into any particular part, and from disease, inability, quiescence, or any other unknown cause acting upon the lymphatics, so as to prevent their absorbing any, or a sufficient quantity, an accumulation of fluid will gradually be formed. The fluid so collected, if in the cavities of the brain, constitutes the disease termed hydrocephalus; in the thorax, hydrothorax; in the abdomen, ascites; in the scrotum, hydrocele; in the body generally anasarca, and when in the lower limbs only, œdema, the subject of this present enquiry. That the cells of the cellular membrane communicate with one another all over the body, is evident in the case

of emphysema, in which the air escaping from the lungs at one point, shall blow up and distend every part of the surface of the body. In a similar manner, watery fluid stagnating in the cellular membrane of the lower limbs, will gradually distend the whole surface; how far the absorbent vessels in such cases may be wholly diseased, quiescent, or by any cause are rendered inactive, or that the accumulating fluids may be more than they are capable of removing, is not easily determined or explained. The effect is obvious to our senses, all the rest merely conjecture. That extravasated fluids of this and many other kinds, as well as other matters both solid and fluid, are taken up by the absorbents and expelled the body, we have every reason to be convinced; but in what manner they are discharged the system, is not so clearly understood. The common opinion is, that they are poured into the subclavian veins, mixed with the circulating blood, and again secreted from it by certain organs. When we consider the nature of the matter that is absorbed, bones, putrid fancies, cancerous virus, urine, gravel, dropsical fluid, extravasated blood, &c. this opinion

opinion appears highly improbable and inconsistent with the simplicity and regularity of our frame. Were the blood vessels the common-fewer to such variety of matter, dangerous diseases would be frequently occasioned, merely by absorption, which experience teaches us is not the case. May not the lymphatic vessels so communicate, so inoscultate with one another in different parts of the body, as to be capable of conveying the absorbed matter to the kidneys and intestines, and so relieve the oppressed system, as we see is done by the operation of diuretics and hydragogue purges? However the absorbed matter may be expelled, we are convinced it is taken up by the lymphatic vessels; and when it is not absorbed sufficiently, our remedies must be applied to that system of vessels, if we would succeed in curing diseases of this nature.

Should any novelty appear in the observations I have here presumed to lay before the public, it will more particularly be found in the application of the warm bath to complaints of the kind now under consideration. As far as my reading or experience has extended, I do not recollect its

having ever been directed before in weakened and reduced constitutions, with œdematos swellings of the lower limbs, in incipient dropsies, or other derangements in the absorbent vessels. The cases of this kind, in which I have used it, are sufficiently numerous, as they have been attended with uniform success; and the following selected, from a great number that has passed under my notice during the last six years, it is presumed will appear to the reader decisive as to its good effects, and justify future trials to confirm or refute the practice.

In the summer of 1790, I was desired to visit Eliz. P—, aged about twenty; naturally of a weak constitution, and had been considerably reduced some time before by a profluviū mensium. Her face was pale and bloated, her lower limbs considerably swelled, retaining the impression of the finger, and not subsiding intirely after a night's rest, pain and sickness at her stomach, with little appetite for food. Her strength was so much diminished, as to render her incapable of staying in her service, which she had quitted some weeks before. The usual remedies had been very properly ad-

administered, and she had tried the cold sea bath, without the smallest abatement of the symptoms; indeed the swelling of her limbs rather increased. I repeated the tonic medicine in a different form, with ferrum vitr. myrrrh, zinc. vitr. &c. vomited her in the morning occasionally, and interposed bitter cathartics and diuretics without any alteration for the better. She was then ordered to go into the warm sea bath, at ninety four degrees, to remain the first time ten minutes, and to be well rubbed with a flesh brush or flannel, in the direction of the lymphatic vessels during the immersion. When she came out of the bath, her spirits were rather mended, and next morning there was perceived a sensible diminution of the swelling. She repeated the bath four or five times in a fortnight, when the swelling of the limbs was entirely gone, and except her strength not being perfectly restored, she considered herself as well. She then bathed in the sea, which completed the cure; and she remained well, without any return of the swelling.

The same season I was consulted for a young person about the same age; she was

œdematous all over her body, not excepting the face; the abdomen rather fuller than natural, and her quantity of urine was diminished, so that there was every appearance of incipient anasarca. She had not been regular for some months. Repeated vomits and purges had been given, with the usual medicines in such cases. The effect of the warm bath in the former case was so evident, that I did not hesitate to direct it in this; but the prejudice against warm bathing in complaints of this nature was so strong in her friends, that it was with the utmost difficulty I persuaded them to consent, and that was not accomplished until they had seen and examined Eliz. P—, and heard the account of her recovery from her own mouth. This young person went into the warm bath only four times in ten days, when the œdematous swellings were entirely removed, and she had no complaint but weakness. She bathed in the sea three times a week, for a short time, and remained well, recovering her usual colour, and healthy countenance.

In the following season I saw a sister of Eliz. P— in a similar situation, but not to the

the same extent; she was chlorotic. The same plan was pursued, and with similar permanent success.

The effect of the tepid sea-water bath in these instances, was evidently, invigorating the lymphatic system, and increasing its power of absorption. Tonics, purgatives, vomits, diuretics, with the cold bath, the usual remedies in these disorders, had been judiciously exhibited before, and used by El. P—— for the space of some weeks, without any abatement of the symptoms. I had no doubt of the complaints being removed solely by the warm bath, as in the first case no medicines were taken during its application, nor afterwards, except such as were necessary to regulate the alvine discharge. The following case will place the success of this practice in a still stronger point of view, and if possible remove every doubt of its propriety.

Miss W——k, aged twenty-two, tall and well formed, has had œdematos swellings in both her ankles, sometimes extending higher up, for the last three years. She supposed the complaint originated from dancing too long at an improper period, the com-

commonly assigned cause for female disorders. Her general health was good, and she was regular, although the periods were sometimes protracted. She had taken a great variety and a great quantity of medicine, by the advice of different physicians; at last she was ordered to bathe in the sea, rather than every thing possible might be done, than with a view of receiving benefit. Accordingly she had bathed a fortnight, sometimes every day, but her strength diminishing, she was convinced that was too often. The swelling not being in the least diminished, and happening to see the first impression of this work, she consulted me. I directed small doses of Calomel and Rhubarb to keep her bowels regular, which were apt to be confined; and to go into the tepid sea-water bath every other night, using frictions as before directed. She bathed in all ten times, and perceived no amendment till after the fourth time, when the swelling quickly disappeared, and she has had no return. She bathed afterwards in the sea more for pleasure than health, and only took the calomel pill, and that but seldom.

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The effect of the warm bath in this instance comes as near to a demonstration, as it is possible for a medicine to produce on an internal part. The complaint had continued three years, without intermission to any degree; during that time every thing had been attempted that promised relief; and last of all, sea-bathing, that universal remedy, was tried, and all without any permanent amendment. After bathing ten times in the tepid sea-water bath, the swelling disappeared, and returned no more, without the aid of any medicine except the opening pill.

I have in many cases of swelled ankles and legs in delicate, weakly women, recommended partial warm bathing with general success; and where sea-water could not be procured, have directed a sufficient quantity of common salt to be added to the water¹. Frictions should be used in the morning, when the swelling is nearly subsided; in the evening, when the parts are very tense and shining, it rarely does good, and always makes the part tender.

¹ In a gallon of Sea-water is about four ounces of salt.

Mrs.

Mrs. R——, a lady advanced in life, of general ill health, particularly a disordered stomach and habitual costiveness. Her legs swell considerably every night, supposed to proceed from her taking no exercise; her custom being to remain upon one floor of her house, and merely to walk from one room to the other in the morning, or rather noon, and return again at night, remaining nearly the whole of the intermediate time in her easy chair. Her legs were uniformly tense, shining, and retained the impression of the finger. It not being convenient to go to any kind of warm bath, nor to have one at her own house, she was directed to sit with her legs in tepid salted water of a pleasant degree of warmth for half an hour every evening, using moderate frictions night and morning. In a few days the swelling abated, and in a short time disappeared entirely, and returned no more. It was very evident in this case, that the tepid bath acted upon the lymphatic system, because, although she was taking tonic and aperient medicines at the same time, yet with very little alteration in her general health, which appeared gradually declining.

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To minds unprejudiced and open to information, the instances I have adduced of the good effects of warm sea-water bathing in oedematous swellings of the lower limbs will be sufficient; to those of a different temper, who are predetermined to oppose every innovation upon the old practice, that does not originate with themselves, I fear no evidence whatever will bring conviction.

As it is at all times possible that some deposition of fluid may be made in different parts of the body, without causing any symptoms of disease or derangement in the system; I think it in most cases the safest practice, before bathing in the sea, to go into the tepid bath two or three times. It will deterge the cutaneous glands, cleanse the skin, and tend to secure the benefit expected from the cold bath: it may be done while the proper preparative evacuations are making².

² "Secondly, the best cures done by the cold baths, are observed to have been performed by the temperate use of the hot baths first, and for one obvious reason, viz. the hot baths by external and internal use, dissolve the impacted humours, and thus the cold bath succeeding, braces the solids."—Dr. RUTTY, on Mineral Waters, p. 23, 4to. Anno 1757.

SECTION

SECTION XI.

BATHING CHILDREN.

THE custom of bathing children in cold water from early infancy is becoming more and more general; and is certainly very conducive to health, whether considered with a view to cleanliness, strengthening the constitution, or rendering them less susceptible to the great and sudden changes in the atmosphere. When it is intended to bathe children or young persons in the sea on account of impaired health, especially at an early age, or under five years, it is essentially necessary to examine the abdomen, and observe if it is larger and fuller than natural, or if there are any signs of obstructions or enlargement of the mesenteric or other internal glands¹. Those affections are very

¹ " Then the greatest care is to be taken, to know
" whether the bowels are sound; for if the lungs, the
" liver, the pancreas, the spleen, or the glands of the
" mesentery, labour under any disease, or putrefaction,
" or schirrus, then the bath (cold sea-bath) will do
" harm."—Dr. RUSSEL on Sea-water, p. 116. An. 1769.

Ed. 5.

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common, and not sufficiently attended to by those who have the care of the rising generation.

When such symptoms are perceived, before they attempt the cold bath, repeated doses of calomel should be given at bed-time, purging it off in the morning gently, with infusion of senna. The latter would of itself purge copiously; but it neither cleanses the intestines of confined putrid matter, hardened faeces, mucus, worms, &c. nor acts upon the obstructed indurated glands. The difference between the operation of calomel and any common purgative, will be easily perceived in the foetor of the discharge. It is an effectual medicine, safe and easy in its action, and no ill consequence can attend its frequent exhibition, provided the child is properly defended from cold and moisture.

If the appetite is diminished, or the stomach appear disordered, which will be known by the foulness of the tongue, let them be vomited gently in the morning fasting with Vin. Ipecac. and solution of Antim. Tart. and repeated according to the urgency of the dyspeptic symptoms. After having pursued this course for a week or ten days,

days, and their belly is sufficiently reduced, should there still appear signs of glandular obstruction in the mesentery, or general habit, any small tumors about the neck or under the chin, it will be advisable to put them into the tepid bath, heated from ninety-two to ninety-five degrees, several times, and then it is probable they may pursue cold bathing with the expected success. But let me again press it upon the minds of all who have the care of children and young persons, more especially on the conductors of those doubtful institutions, Ladies boarding-schools; that if children are bathed in cold water when their belly is full, hard or tumid, so far from receiving benefit, they will be in extreme hazard of some dangerous disease being brought on, by the action of the cold water upon the body when so circumstanced. I should not so earnestly reiterate this caution, did I not observe, every season, much harm done by bathing children and young persons without proper caution. The following case among many that have come under my care, will exemplify this opinion.

Henry

Henry T——n aged ten years, was sent down in the summer of 1795 to bathe in the sea ; having been much debilitated by previous illness, and frequent bleeding at his nose. After drinking salt water several mornings which purged him smartly, he bathed in the sea, and came out cold, but soon after on using exercise became warm. After a day or two he bathed again, which was soon succeeded by frequent shivering, heat, fever and vomiting. When I visited him, on examination I found his belly full, hard and distended to an uncommon magnitude for his size. The principal medicines I directed were to purge and vomit him as his strength would support. By these means he discharged a great quantity of bilious fœtid matter, and which he continued to do through the whole period of the disease, more particularly on the thirteenth day, when the stools were uncommonly large and offensive. After keeping his bed fifteen days, he with much difficulty recovered.

RICKETS.....This disease does not so frequently occur as formerly, owing in great measure to the improved method of managing children in early infancy, especially

in the manner of nursing. The spirit of cleanliness, the commendable luxury of the age, is more extensively diffused among the lower ranks of the community ; and where cold bathing is used from the birth, or at least constant washing, symptoms of the rickets rarely appear. Among the middling and higher ranks of society rickety children are seldom found ; they have more air and exercise, their chambers are better ventilated than formerly, and what is still a greater preservative, the delightful task of sucking the infant is not so generally devolved on hirelings and mercenaries. Some distinguished persons have set an example, which is very generally followed when the health of the mother will permit. The task in itself is so pleasant, and the satisfaction continually arising so pure, that women of virtue will not easily delegate to others, what is so natural, so essential to their own and their children's health and future happiness.

The symptoms of Rickets usually appear first in children about the age of nine months, and rarely after they have attained two years. Sometimes it may be traced to a

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scrophulous habit in either of the parents, but more frequently arises from whatever may weaken the digestive powers, and impede the body's nourishment; bad nursing, the want of sufficient exercise and air. The milk of hired nurses being often too thin and poor, although not deficient in quantity, and the child continuing to live too long on such feeble sustenance, by weakening the principles of life, may prove the proximate cause of rickets.

The first symptoms observed, are a general paleness and flabbiness of the flesh, the head larger, and the forehead more prominent than are natural, the neck proportionably too small, the sutures and openings of the head long in closing, the belly full and large, the stomach keener than usual, the bones at the joints of the wrists and ankles enlarged; these symptoms are necessarily accompanied with languor and inaptitude to motion.

The cold sea-bath is a proper and in many cases an effectual application in this disease; but it should be used with caution. In the advanced stage when there is great debility, I have seldom seen it attended

with much benefit ; and when it does not succeed, it infallibly augments the weakness of the habit, and renders the symptoms more obstinate and difficult to be removed. Before it is attempted, the tension and enlargement of the abdomen, always present, must be subdued by small doses of calomel and rhubarb, repeated as the strength and other circumstances may indicate ; gentle vomits in the morning, repeated at proper intervals, act immediately on the digestive organs, and remotely by the agitation on the viscera of the lower belly. The tepid bath should be used until the urgent symptoms abate, the appetite, strength and spirits are improved, and an appearance of returning health is observed in the countenance, which is more easily perceived than described.

When these changes have taken place in the constitution, the cold bath may be tried ; but if after two or three times, the warm glow with an increase of vigour and spirits do not succeed, it must be abandoned, and recourse had again to the tepid bath three or four times a week, until the habit has acquired sufficient powers to resist the shock

shock of the water and produce the reaction. Tonics of such a nature as can be conveniently taken, and agree with the stomach and bowels will be properly directed; among which, the preparations of steel and copper are generally preferred, because of their superior efficacy, and being given in small quantities they can be persisted in with greater ease to the patient than more voluminous preparations.

Exercise, in such a manner as may be agreeable and not fatiguing, is of the first necessity; it being a criterion of the disease, when the little people contrary to their nature do not wish to move about, but would sit in their chairs the whole day if left to their own will. When too young to ride on horseback, which is of all exercises the most salutary, a swing in the open air is not a bad substitute, and at the same time agreeably amuses the mind, which should never be neglected. If the bones are softened and disposed to bend, they must not be kept in an erect posture, but continue nearly in an horizontal position until the spine acquires strength to support the incumbent weight of the body. For this

purpose a small sea cot suspended, will be found a convenient mode of giving motion. In rainy weather when confined to the house, a chamber-horse, or a board loosely supported at each end may be adapted to their use. Frictions frequently repeated with dry, soft flannel, or the softest flesh-brush may be used night and morning; it will strengthen the muscular parts, and promote a more equal circulation of the fluids, more especially in the lymphatic system. Sailing on the sea in fine weather and smooth water is a pleasant amusement, and will be found in this, and most other cases attended with debility, a powerful means in restoring health. The fickness to which people unaccustomed to the sea are in general liable, is most distressing while it continues, but acts more effectually upon the stomach and organs of digestion, on the liver and biliary vessels, than any means which art could venture to apply.

SECTION XII.

NERVOUS DISORDERS.

NERVOUS complaints are supposed not to have been known before the present century, and to have principally originated from the general custom of drinking tea. But a learned and celebrated physician of this country, who lived in the end of the last century, has minutely described the symptoms of the Hysterick and Hypochondriack diseases, the nervous of his time, and reckons them to constitute half of the chronic diseases then prevalent¹. At that time, tea was but just come into use among people of the first distinction, and therefore

¹ "Hic morbus, si recte calculum pono, Chronicorum omnium frequentissimè occurrit; & sicuti Febris cum Appendicibus suis duas partes tertias, ad chronicos morbos simul sumptos si comparentur compleat, ita affectus hysterici (vel ista saltem qui eo nomine insignitur) ad reliquæ partis tertiae dimidium assurgunt; hoc est, Chronicorum pars media sunt."—SYDENHAM Ep. ad Dr. COLE. Anno 1681.

could not act as a general cause²; in fact, the disease then and now is of a similar nature and proceeds from similar causes, namely, disorders in the stomach and organs of digestion, brought on by previous illness, intemperance, and irregularity in air, exercise and the passions of the mind; by dissipation, late hours, hot rooms, and crowded assemblies.

There is no class of diseases, in which the effects of sea-bathing are more conspicuously beneficial than in the nervous, from whatever cause proceeding: independent of the immediate action of the water upon the body, the novelty of the surrounding objects, the pleasant walks and rides, the clearness and elasticity of the air, and above all, the change of scene, the leaving persons and situations where much distress may have been suffered, and to which ideas of sorrow are constantly associated; all these circumstances, separately or combined, give a new colour to their perceptions, relieve the

² How far drinking tea may occasion, or be a means of continuing nervous complaints, is no part of my present subject; but I am disposed to give my suffrage in the negative, upon general principles.

mind from its heavy load of oppression, and soothe the irritated nerves into peace and complacency. These effects are beyond the power of medicine, and above the effort of the distressed debilitated sufferer; for although in many cases, the patient may and ought "to minister to themselves," yet, when the mind is deeply tinctured with grief, sorrow, anxiety or any other jarring passion, next to time, the soother of every sorrow, change of scene produces the greatest relief.

From the wonderful conformation of our frame, the mind and body mutually sympathise and act upon each other. A long continuance of grief and anxiety occasions disorders in the abdominal viscera, especially in the liver; and when these disorders are produced by a sedentary life, or other causes independent of the mind, the nervous system will be generally affected, its sensibility and irritability morbidly increased, and a train of symptoms ensue, as numerous and various, as difficult to be described or rationally accounted for.

In every species of nervous complaint, it is particularly necessary to pay attention to the state of the stomach and bowels; the former

former is commonly found disordered with a prevailing acid, sometimes extremely sharp; and from an impaired secretion of the natural juices we very often find a tough, viscid, gluey phlegm, lining its internal surface, which destroys the appetite and impedes digestion; these can only be removed and corrected by frequent vomits taken in the morning fasting. The intestinal discharge is for the most part irregular; in some cases obstinately costive, in others the contrary extreme; occasioned probably by a deficiency in the quantity or quality of the bile. In some habits it may be supposed that a sufficient quantity of bile is not secreted, from some morbid affection of the liver: This is to be suspected, when with obstinate costiveness the surface of the body is pale, the urine limped, and neither tinged with yellow. Enlargement and induration of the liver, with more or less of deep seated dull pain, will often be found in delicate weakly women, who have been afflicted by a long continuance of nervous complaints. That this state of the liver may be induced sometimes by their indolent inactive manner of living, is more than probable; but I am disposed to believe that it is much more

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frequently the original cause of the nervous complaints than has usually been suspected. When that happens to be the case, and my experience warrants me in saying it is not a rare occurrence, I need not point out to the intelligent reader, the more than want of efficacy in the common treatment of nervous disorders; that the musk, camphor, valerian, castor, cordial and volatile juleps composed of these and such like, with the long train of foetid gums that are poured in such abundance upon these unfortunate people, act merely as drams, as temporary alleviation of the symptoms, leaving the cause of the disease to continue its ravages undisturbed upon the constitution, until the principles of life are undermined, and the poor patient expires, to the surprise of all her friends, who never dreamed of her being in danger.

In this state of the liver when free from inflammation, the only remedy we can depend upon is mercury; and the best and safest manner of exhibition, is to rub a small portion of the ung. Hydrarg. fort. upon the diseased part; when that cannot be complied with, the emp. lithargyri cum hydrargyro may be applied, removing it occasionally

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to prevent the mouth being affected, which in these habits is very readily done, unless guarded against by taking gentle aperients to keep the bowels open. The warm sea-bath will greatly assist this plan, by increasing the action of the lymphatics, softening and dispersing the fullness and hardness of the abdomen.

Before recourse is had to the cold bath, it is absolutely necessary to remove or greatly mitigate the symptoms I have enumerated : those originating in the stomach by repeated emetics, bitters and tonics ; those of the bowels by small doses of calomel, bitter cathartics, &c. but given in doses that may operate moderately, as purging infallibly impairs the strength and augments the general debility ; and the affections of the liver, by a course of mercury and the warm sea-bath, conducted according to the age, sex, and other attending circumstances.

There is no doubt that many people afflicted with these complaints, every season go into the sea without observing any precaution, or using any preparation ; but it is also well known that, of these many do not receive any benefit from bathing, and in others

others the symptoms are aggravated and rendered more intractable.

In all cases where the nerves are too exquisitely sensible, the mind should be kept as easy and quiet as possible; amusements, such as they can partake of, cheerful company, and whatever may prevent painful and anxious thinking, contribute much to the return of health. Exercise in the open air should not be neglected when the weather is fine, especially on horseback, but carefully guarding against fatigue, and this requires more attention than is usually thought necessary; persons in this state of health are apt to have their spirits at times so much elevated, as for the moment to forget all their pains, and all their sorrows, thinking themselves capable of any exertion; but the languor, tremors, and debility they experience the next morning convince them they are not the heroines they thought themselves. Dancing is a good and a salutary exercise, at the same time the body is agitated the mind is exhilarated and cheerfully amused; but it is extremely difficult, with so many allurements, to desist in time and avoid excess. When our comforts, our pleasures, our amusements are intirely

intirely in our own power, we are very apt, while enjoying them, to overstep the line of moderation. Let it therefore always be had in remembrance, that exercise carried beyond proper bounds, beyond what is adapted to the strength and constitution, becomes labour, and that labour fatigues the body and enervates the mind.

To persons unaccustomed to bathing there is something alarming in being plunged into a great body of cold water; but even in the most reluctant, a short time not only familiarises them to the practice, but it becomes pleasent and agreeable. When great timidity comes in aid of the shock of the water upon the habit, and prevents the glowing warmth so necessary to its proving beneficial, some slight aromatic medicine, peppermint lozenges, spirit of lavender, or a few drops of any volatile spirit may be taken upon coming out of the water; but cordials and spicy medicines are seldom if ever adviseable. If the chilliness proceeds from a deficiency of strength bathing is improper, or at least will not be attended with benefit, and therefore should not be continued; and if only from fear and the first effects of the cold

cold water, these trifling remedies will be sufficient ; after a few immersions they will not be wanted.

HYSTERICAL AND HYPOCHONDRIACAL affections, come under the general denomination nervous, and require the same treatment ; particular attention being had to the remote causes.

SAINT VITUS'S DANCE....Cold sea-bathing is well adapted to relieve those irregular convulsive motions termed chorea sancti viti. Observing the general cautions, and attending to the state of the stomach and bowels, the complaint seldom proves obstinate.

PALSY....Sea bathing is very generally directed in the cure of palsey, and in many cases with much relief. In slight paralytic affections where the power of using the limb is impaired, but not destroyed, the cold bath may be properly applied as a general tonic. But when the power of motion on one side, or in one particular limb is intirely suspended, and that from a sudden attack, I have not observed cold bathing, even when long continued, produce any sensible good effects. If by the use of proper medicines, electricity, frictions,

the

the warm bath and exercise, the vital principle can be roused in the part diseased, some sense of feeling and motion recovered, then I think the cold sea bath may be attempted with a prospect of success. They should perform the operation as quickly as their powers will permit, not staying a moment in the water; it may be repeated at proper intervals if the warm sensation regularly succeeds the immersion; if not, they must desist for the present, till the constitution acquires sufficient strength to bear the shock of the water.

In confirmed palsey where no sense or motion remains in the part affected, the warm sea-bath heated from ninety-five to one hundred and ten degrees, with acrid frictions during the immersion, has, in some cases been attended with much relief; this is contrary to the present practice, but it is sanctioned by great authority. “ Quin
“ etiam fovere aqua calida marina; vel si
“ ea non est, tamen salfa, magnopere neces-
“ sarium est. Ac, si quo loco vel naturales,
“ vel etiam manufactæ tales natationes sunt,
“ iis potissimum utendum est: præcipueque
“ in his agitanda membra, quæ maxime difi-
“ ciunt

“ciunt, si id non est, balneum tamen
“prodest^{3.}”

EPILEPSY....In this disease also, cold sea bathing is commonly recommended, but I cannot say my experience justifies the practice. Where it has been of long continuance, there is seldom any abatement of the fits either in frequency or violence from bathing, even when persisted in during a whole summer. When it is used great caution is necessary, lest the patient should be seized while in the water, and in an instant perish. Should the bodily strength, from the violence of the fits or from any other cause, be much reduced, cold-sea bathing as a general tonic may be of service, but in these cases the muscular strength is rarely diminished.

When the complaint is slight and irregular in either sex before the period of puberty, cold bathing is adviseable to strengthen the constitution, and assist nature in surmounting the disease when that period arrives.

HEAD....In giddiness and some affections of the head, evidently arising from general debility or from an increased sensibility and irritability of the nervous system, sea bathing

³ CELS. lib. iii. cap. 27.

has been found beneficial, attention being had to the proximate cause. But should the giddiness be attended with a sense of fulness or pain, increased by motion, any signs of plethora in the habit, redness in the eyes, or symptoms of hydrocephalus, it must upon no account be ventured upon.

There is not any complaint the human body is subject to, in which such mature deliberation is absolutely necessary respecting cold bathing, as in disorders of the head; for should it be improperly applied, the consequences may be irreparable and even fatal.

In the course of my attendance at the seaside, not having had an opportunity of observing the effect of sea-bathing in persons supposed to have been bitten by mad animals, I cannot speak upon that subject from experience, and it is of too great importance to draw any conclusions from analogy. The very great difficulty, and in some cases the impossibility of discovering whether the animal had really been mad, has thrown a great degree of doubt and uncertainty upon the various modes of treatment. And the case published by a late eminent physician, which terminated fatally, has brought into doubt

doubt the efficacy of a vaunted nostrum that has very generally been supposed infallible in preventing, and when present in curing the hydrophobia ⁴. In observing on a malady so dreadful, and I fear for the most part fatal, any fact well authenticated may have its use. The following instance, the only one that has ever occurred in my practice, seems to place the madness of the animal beyond a doubt, and to confer some degree of confidence on the treatment. A man, a woman, and several dogs were bitten by a supposed mad-dog, who was, as is too often done, soon after destroyed. A fortnight after the accident I saw them. The woman was slightly wounded in the middle finger; a black scab remained and closely adhered to the puncture. She felt great pain in the arm shooting up to the head, particularly in the night, with disturbed and alarming dreams, and great depression of spirits. The man had been bitten in the hand also, but had not so much pain. I directed them to use mercury in the manner recommended by the late Dr. James, in his treatise upon this subject. In a few days the symp-

⁴ Dr. FOTHERGIL on the Ormskirk Medicine.

toms abated, and as the woman's mouth was sore, the medicine was omitted. Very soon after the pain returned with increased violence, and affected her head with pain and giddiness. She resumed the application of the mercury and every symptom disappeared; they both remained perfectly well.

The same medicine was given to the dogs, but by some accident, one of them was overlooked and took none; he became raving mad on the thirtieth day after the accident, and in that state I saw him shot. It is a common opinion in the country, and relied upon as certain, that if a dog is really mad, another dog that is well, will refuse with signs of horror, a piece of flesh that has been rubbed against the mad dog's mouth and imbued with saliva; I had this put to the test, but a healthy dog eat the meat as readily as he would have done any other. All the rest of the dogs remained well, except a little lap-dog which died of the salivation. It is more than twenty years since the accident happened, and having continued in friendly intercourse with the family, had any symptoms of the disease appeared in any of my patients, I should have been immediately informed.

informed. It should be observed, that neither the man or woman had any suspicion of the dog's madness until they began to take the medicine; the mind therefore had no influence in producing the symptoms which ensued.

To those who bathe in the sea for pleasure, independent of medical considerations, cautions and directions may appear superfluous and unnecessary, but it is a part of my duty to impress upon their minds, that many accidents have been occasioned by going into cold water when the body has been heated and otherwise disordered; fevers, head-achs, vertigoes and apoplexy have been the consequence. To avoid the chance of being injured in this way, let them, when they first begin bathing, follow the proceeding directions respecting the stomach and bowels. Let them go into the water early in the morning, or if at any other time of the day, it should be at such a distance of time from having taken food, that the process of digestion may have been finished; it being at all times dangerous to bathe in cold or warm water on a full stomach. Should they feel the smallest sensation of internal chilliness

while in the water they should immediately return and use exercise.

As the sole motive I had in publishing these observations, was the hope of their proving useful, not only to the profession, but to the public at large ; I have avoided as much as was consistent with perspicuity, all theoretical reasoning and fanciful disquisitions on the action of cold bathing upon the body, and the effects it may produce in diseases ; confining myself strictly to what I have seen in the course of my long attendance at the sea-side, and to such facts as have distinctly and repeatedly arisen immediately in my own practice.

Meaning that this work should serve as a *vade-mecum* for persons intending to bathe in the sea ; pointing out to them what they should do, and what they should not do ; cautioning them by presenting the consequence of acting rashly, ignorantly, and unadvisedly, I have entered no farther into the nature of the different diseases or their medical treatment, than what appeared necessary to explain the principles on which I have recommended warm and cold sea-bathing. And as it is far, very far ! from
my

my intention to preclude or render unnecessary, the advice of the physician when medicine is to be exhibited; or to enable the patient to risk his own life, by prescribing for himself, I have been very cautious in giving formulæ. Some one says, and he says truly, “Whoever prescribes for himself “has a fool for a patient.”

What degree of information the reader may have received from the perusal of these pages, becomes not me to estimate; but I may be allowed to say, that the subject has been treated with fidelity and precision; without exaggeration, without drawing conclusions which the premises would not fairly bear, or composing cases on purpose to support a favoured and preconceived hypothesis. I have observed with caution, I have noted deliberately, and the fruits of thirteen summers experience I have fairly and candidly lain before him. Having thus finished this part of my task, let me conclude, by again pressing the caution so often repeated, never to begin cold bathing without having previously emptied the first passages; nor to persist in its use, upon any consideration whatsoever, when the warm glow does not immediately succeed the immersion.

SECTION XIII.

INHIBITION.

ALTHOUGH in the foregoing Sections I have pointed out the situations of health in which cold sea-bathing is improper, it may conduce to the ease, if not to the information of the reader, the recapitulating and placing under one point of view the diseases and other deviations from health, in which I think it is improper and may prove injurious. In doing this I must desire to be understood in general terms; many cases will occur of the diseases I shall mention, in which, from certain varying symptoms and circumstances in the constitution, it may be thought advisable to try this remedy; but of those the attending physician, after weighing my reasons for exclusion, will be a competent judge.

From the experience acquired in my long attendance at the sea-side, it is my decided opinion, that cold sea-bathing is improper in the following cases of impaired health; and if pursued, will occasion an increase

of

of the complaint, or produce some other derangement of the system.

1. In all disorders affecting the head with pain, giddiness, sense of fulness, enlargement, hydrocephalus and deafness. I have before observed, that giddiness arising merely from debility of the general system, or from an increased degree of irritability and sensibility of the nerves, may be an exception.

2. In all diseases of the breast, in every species of pulmonary consumption, spitting of blood, catarrh, asthma during the fit, and difficulty of breathing, cough, pain, stitches, or uneasiness upon taking a full inspiration, empyema. Sometimes we observe a troublesome cough attending nervous complaints, independent of any affection of the lungs, and proceeding from irritability alone : It may be distinguished from other coughs by not troubling the patient at night, or at any time in a recumbent position, but only when sitting upright, or in an erect posture. This kind of cough need not preclude cold-bathing, but it requires some precision and experience in the discrimination.

3. The

3. The influence of the stomach is so great and extensive on the constitution, and its sympathy in every condition of health or sickness so important, that it becomes the first of our medical duties to pay particular and immediate attention to its situation, previous to our directing cold-bathing. In cases of inflammation, pain, or scirrhus in this organ, cold-bathing will not come in contemplation. When it is disordered with bile, viscid phlegm, acid fluid, or any other offending matter, until that is removed the reaction of the system, on which the beneficial effects of bathing depend, will not be complete. The tongue very commonly indicates the state of the stomach ; when that is foul and tinged in the middle with yellow, let bathing be deferred. But although a clean tongue may very generally, yet it is not always to be depended upon as a criterion of a clean stomach. In many instances where the tongue has been perfectly clean, I have seen much phlegm and bile discharged by a gentle emetic taken in the morning fasting ; therefore, when there is no contraindication, it will be the safest practice to

wash

wash the stomach out previous to cold-bathing.

4. When the viscera of the lower belly are not in a sound and healthy state; when the intestines are constipated, or loaded with faeces; when the liver, the spleen, the kidneys, the bladder, give signs of enlargement, obstruction, or any other deviation from a sound state: when the biliary vessels are obstructed by calculi, inspissated bile, or when there is a deficiency in the quantity secreted of that fluid, with a yellow tint on the skin or whites of the eyes, attended with debility. In a looseness or diarrhoea.

5. In great debility and prostration of strength, where the vital principle is so much diminished as to prevent the reaction of the system and succeeding warm glow.

6. In gout, fixed or wandering; in rheumatism, acute or chronic; when any pain or stiffness in the joints is present, nor until some time has elapsed since recovering from the last attack.

7. In every species of dropsy, whether general or particular, whether leucophlegmatic or dropical diathesis; in oedematous swellings of the lower limbs, which has a close

close affinity to dropfy, if it is not the first appearance of anasarca.

8. In every species of fever or feverish complaint, in which the pulse is accelerated or the heat of the body augmented; whether in a continued form, remitting, or intermitting regularly. Some exception may perhaps be made to obstinate tertians and quartans, but in such cases I have not seen the cold bath used.

9. In all diseases of an inflammatory nature, eruptions, with red and inflamed basis, that itch and induce scratching when warm in bed; erysipelas of every species; in every kind of herpes, shingles, &c. I have before observed, that cold-bathing is not favourable to those subject to inflammatory diseases.

10. During the period of natural evacuations in either sex, nor at a time when they may be reasonably expected to appear; in this class I include the hemorrhoids or piles, external and internal.

Thus much I have thought it my duty to state upon the negative side of the question; the affirmative will be composed in fewer words, although the sphere of its action is not less extensive.

In all cases of impaired health in which it is desirable to augment the energy of the vital principle, to increase the action and strength of the muscles, to improve the appetite and assist the digestive organs ; to give stability and tone to the nervous system, to fortify the mind against weak and improper impressions, and to induce in the constitution a general healthy action, the regulation I have presumed to lay before the public being observed, the cold sea-bath will prove A VALUABLE, AN EFFECTUAL, AND A PERMANENT REMEDY.

WARM SEA-BATHING.

Having recommended the use of warm or tepid salt-water bathing in a variety of diseases, it may be expected that I should also point out in what cases it will be hazardous, or affording no relief. I have already said, that only two instances have come to my knowledge in which it has occasioned actual disorder, and one of them appeared to have been caused by the water having been made too warm, and in the other it was used without medical advice.

In

In the following complaints and conditions of health, it has appeared to be unadvisable.

In diabetes it is improper, because the absorption on the surface of the body will increase the flux of urine. In one case which came under my notice, the patient had been bathing some weeks in the warm sea-bath for the rheumatism; it was evident he made more water the days he bathed.

When great pain precedes the periodical evacuation, warm or tepid bathing will afford much relief; but it must not be continued after the pain is removed.

In any period of pregnancy I would be cautious in its application, but it has not occurred to me to see its effects in that situation.

In confirmed dropsy, relief is scarcely to be expected, but it will not produce any augmentation of the disease.

In hemoptyses, or any internal hemorrhage, it is not to be attempted.

Those who have ruptures should not use the warm-bath, except when they are perfectly reduced, and it will be right to wear a truss or bandage during the immersion,

to

to prevent their coming down by the rarefaction of air in the intestines.

On the other hand, the warm sea-water bath properly regulated, will be found a powerful agent in the cure of œdematos swellings of the lower limbs, incipient dropsy, deposition of fluid in any cavity of the body, or in any part of the cellular membrane; in all cases where the action of the absorbents is required to be increased; in eruptions of every kind and species; in swellings, stiffness, and contractions of the joints, whether an original disease, or the consequence of gout, rheumatism, or external injuries; in spasmodic and convulsive disorders, by its sedative operation; in the wandering gout, in rheumatism of the chronic kind; in chlorosis, attended with œdematos swellings of the limbs; in rickets, and other diseases of children, in which there is hardness and enlargement of the abdomen; in jaundice, indurations of the liver, and obstructions in the biliary vessels from calculi or inspissated bile. In pulmonary complaints, I am disposed to think favourably of its use, and have no hesitation in directing it in the early stage of the phthisis

phthisis pulmonalis ; but my experience does not warrant my speaking decidedly upon that head.

As a general instruction, whenever cold bathing is proper, it is my opinion that the tepid bath should be used several times as a preparative, heated from 92 to 95 degrees, remaining each time from 5 to 20 minutes, according to circumstances : this will not only purify the skin, but will at the same time remove any deposition of fluid in the cavities, and tend to open obstructions in the secretory and excretory organs.

It will afford me very sincere satisfaction, if what I have said upon this subject, *upon this new line of practice*, may awaken the attention of the profession to the advantages they may reasonably expect from warm sea-bathing in a variety of complaints, in which they have hitherto found great difficulty, by facilitating the cure, and shortening their duration.

Whatever predilection I may entertain for this practice, arising from my conviction of its utility, I hope and trust I have not overstepped the bounds of truth in anything I have written ; it is before the public, and

and any reputation I may have will rest upon their decision, founded upon fair and candid experience.

SECTION XIV.

ON THE NATURE AND QUALITIES OF
SEA-WATER.

THE water of the sea is a compound fluid, containing various kinds of salts, and an earthy bitter matter giving it some degree of unctuousity. That it also contains animal matter may be presumed from its becoming putrid and highly offensive when excluded from the air and kept in a close vessel. In the great ocean the water appears of a bluish green colour, but in a glass it is colourless, perfectly clear and sparkling; it is hard, and curdles a solution of soap. To the taste sea-water is salt, bitter, and nauseous; when drank to the quantity of half a pint or more, it usually purges briskly, but when it has not this effect, it heats and greatly disorders the stomach and bowels. If mixed with an equal quantity

I of

of warm milk, the taste is ameliorated, and the operation rendered more gentle; or if boiled with equal quantities of milk and the curd strained off a whey will be formed, which is the most elegant and not the least efficacious manner of exhibiting sea water. Outwardly applied, by its sudden action upon the surface of the body, it has a tonic effect, rousing the energy of the system, and exciting the vital principle to more powerful exertions, as has been explained in the preceding pages.

To ascertain the relative degree of heat in sea-water and the atmosphere, a course of experiments were made at the bathing place Ramsgate, in August, September, and October, 1788, at the depth of four or five feet, and taken between the hours of seven and nine in the morning. It will be observed, that the heat of the water is very near that of the air in the shade, differing about two degrees either way, but uniformly colder when the wind was easterly. On the 30th of August, the thermometer in the shade stood at 58° , in the sea at 60° , wind west. The same day at eleven o'clock in the Downs, at the depth of 30 feet, it stood at 60° .

In

In August, the range of the Thermometer,
between 7 and 9 in the Morning, was,

In the Shade, 58° to 66° . Medium 62° .—

In the Sea, 60° to 64° . Medium 62° .

Sept.—In the Shade, 56° to 67° . Medium
 $61^{\circ} \frac{1}{2}$.—In the Sea, 54° to 65° . Medium
 $59^{\circ} \frac{1}{2}$.

Oct.—In the Shade, 52° to 62° . Medium
 57° .—In the Sea, 52° to 58° . Medium
 55° .

The Average of 12 Days Observation, taken
between the 3d and 21st of August, 1795,
Morning and Noon.

Morning.—In the Shade, 65° .—Sun, $71^{\circ} \frac{1}{2}$.
Sea, $61^{\circ} \frac{1}{2}$.

Noon.—Shade, $69^{\circ} \frac{1}{2}$.—Sun, $72^{\circ} \frac{1}{2}$.—Sea, $67^{\circ} \frac{1}{2}$.

116 DIRECTIONS FOR WARM [Sect. XIV.

" EXPERIMENTS to determine the Temperature of the Water at different Depths of the Sea, and Quantity
 " of Salt it contains; made with the Bottle fitted by Dr. IRVING.—A measure containing 29 oz. 59 grs.
 " of pure Snow-Water, was used as a standard.—Thermometer 59°.—Barometer 30 06.

" Sea."

| Day of the Month. | Weight of the Water. | | Depth in Fathoms. the Surface. | Thermo-meter at the Surface. | Thermo-meter in Water from the Bottom. | Thermo-meter in the Air. | Weight of the Salt. | Latitude, &c. |
|-------------------|----------------------|-------|--------------------------------|------------------------------|--|--------------------------|---------------------|--|
| | Oz. | Gr. | | o. | o. | o. | Grs. | o. |
| 1773. | | | | | | | | |
| June 1 | 29 | 404 | - - - | - - - | - - - | - - - | 393 { | 51 31 54 8 off Flamb ^s Head. |
| 9 | 30 | 2 | - - - | - - - | - - - | - - - | 500 | Nore. |
| 11 | - - - | - - - | 32 | 51 | 49 | 55 | - - - | |
| 12 { | 29 | 440 | Surface | 50 | - - - | 50 | 490 { | 60 o off Shetland. |
| | 29 | 442 | | 65 | - - - | 44 | 490 | |
| 26 | 29 | 462 | - - - | - - - | - - - | 36 | 496 | 74 o at Sea. |
| July 3 | 29 | 454 | - - - | 40 | - - - | 44 | 500 | 78 o |
| 19 | 29 | 369 | - - - | - - - | - - - | 44 | 476 | 80 o near the Ice. |
| Aug. 4 | 30 | 15 | 60 | 36 | 39 | 32 | 510 | 80 30 under the Ice. |
| 31 | 12 | 360 | 80 | 51 | - - - | 48 | 220 | |
| Sept. 4 { | 12 | 365 | 683 | 55 | 40 | 66 $\frac{1}{2}$ | 192 | 75 o at Sea. |
| 7 | 12 | 365 | - - - | - - - | - - - | 60 | 216 | |
| | - | - | 56 | 57 | 50 | 60 | - - - | 60 14. (1) |

(1) Voyage to the North Pole, by Cons. Jⁿo PHILIPS, p. 143. App. 4to. Anno 1774.—The Experiment made by Dr. LAVINCE.

“ Sea-water taken up at the back of
 “ Yarmouth fands, was in the following ratio
 “ to distilled water :

| | oz. | dws. | grs. | |
|---------------------|-----|------|------|---------------|
| “ Sea water - - - | 21 | 16 | 13,7 | } Therm. 53°. |
| “ Distilled water - | 21 | 4 | 16 | |

“ Which is, as 10192 : 10477,7 ; or as 1 :
 “ 1,02803.

“ The quantity of dry salt produced from
 “ the above water, was 13 dwts. 15 gr. ; it
 “ appears, therefore, that sea-water contains
 “ more air than distilled water.”

“ In a gale of wind the thermometer
 “ plunged into a wave of the sea, rose to
 “ 62° when the atmosphere was 50°. This
 “ experiment was frequently repeated during
 “ the gale with nearly the same result. At
 “ night when the weather became mode-
 “ rate, the heat of the water at 30 fathoms
 “ below the surface was 55°. The surface
 “ and the atmosphere 59°. Wind S. W.
 “ a fresh gale ².

² Voyage to the North Pole, by CONS. JNO PHIPPS,
 p. 143. App. 4to. Anno 1774. The experiments made
 by DR. IRVING.

ANALYSIS OF SEA-WATER....“ Sea-water
“ contains chiefly a neutral salt, composed
“ of fossil alkali and marine acid. It like-
“ wise contains a salt which has magnesia
“ for its basis and the same acid. These
“ two salts are blended together in our
“ common salt in England, which is pre-
“ pared by quick boiling down sea-water.
“ But when the process is carried on by the
“ Sun, or a slow heat, they may be col-
“ lected separately ; that which has the
“ fossil alkali for its basis crystallising first ;
“ and this is of a vastly superior quality for
“ preserving meat, and for other culinary
“ purposes. The mother liquor now re-
“ maining, being evaporated, affords a vi-
“ triolic magnesia salt, which in England
“ is manufactured in large quantities, under
“ the name of Epsom salt.”

“ Besides the salts which are subjects of
“ trade, sea-water contains a selenitic salt, a
“ little true Glauber’s salt, often a little
“ nitre, and always a quantity of gypfeous
“ earth suspended by means of fixed air.”

“ The specific gravity of sea-water to that
“ of pure distilled water, is at the Nore as

“ 1000

" 1000 to 1024,6; in the North Sea as
" 1000 to 1028,02."

" In the North Sea, in 30 oz. of sea-water
" was 500 gr. of salt ^{3.}" Which is nearly
4 oz. in a gallon.

I found the weight of sea-water at Ramsgate, in the year 1795, compared with pure rain water to be as 549 to 538: which is,

3 3 gr.

2 2 40 in a gallon heavier than rain water.

³ Voyage to the North Pole, by CONS. J^{NO} PHIPPS,
p. 143. App. 4to. Anno 1774. The experiments made
by DR. IRVING.

The following Table will shew the different Quantity of Salt contained in Sea-Water, from the Latitude of 50° South to 82° North.

| | | | |
|------------------|-------------------------|---------------------------------------|---------------------------------|
| "In Latitude | $49^{\circ} 50'$ | South - 100 lb of Sea-Water contained | $4 \frac{1}{8}$ lb of dry Salt. |
| $46^{\circ} 12'$ | S. - - - 100 lb ditto | - - - - - | $4 \frac{1}{2}$ |
| $40^{\circ} 30'$ | S. - - - 100 lb ditto | - - - - - | - 4 |
| $25^{\circ} 54'$ | S. - - - 100 lb ditto | - - - - - | - 4 |
| $20^{\circ} 24'$ | S. - - - 100 lb ditto | - - - - - | $3 \frac{1}{12}$ |
| "In Latitude | $10^{\circ} 16'$ | S. - - - 100 lb Sea-Water contained | $3 \frac{1}{2}$ lb of Salt. |
| $4^{\circ} 22'$ | North - 100 lb of ditto | - - - - - | $3 \frac{1}{2}$ |
| $10^{\circ} 14'$ | N. - - 100 lb of ditto | - - - - - | $3 \frac{2}{3}$ |
| $25^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | $3 \frac{3}{4}$ |
| $39^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | - 4 |
| $45^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | - 4 |
| $59^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | $3 \frac{1}{2}$ |
| $64^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | $4 \frac{1}{2}$ |
| $74^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | $4 \frac{2}{3}$ |
| $81^{\circ} 00'$ | N. - - 100 lb of ditto | - - - - - | - 4 In the ice." |

In View of Martin Vass's Island.

Having Soundings in
the German Ocean.

"The

"The sea-water in the process of freezing
"is deprived of most of its salt, the ice
"being nearly fresh 3."

By this table it appears that sea-water is
saltiest in high latitudes, and freshest under
the line, contrary to what might have been
expected.

Sea-Water with Alcali and other Mixtures
had the following appearances, after stand-
ing some hours:

| | |
|--|--|
| Oil of Tartar - - - - - | { White, turbid, precipitating slowly. |
| Aqua Ammoniae - - - - - | White cloud. |
| Solution of Alum - - - - - | Remained clear. |
| Lime Water - - - - - | Milky, cloud precipitated. |
| Solution of Sugar of Lead - | Milky, white settlement. |
| Vitriolic Acid - - - - - | No change. |
| Syrup of Violets - - - - - | No change. |
| Infusion of Galls - - - - - | No change. |
| Infusion of Logwood - - - | Slight purple tinge. |
| Infusion of Rhubarb - - - | Rather brighter yellow. |
| Solution of Soap - - - - - | Curdled. |
| When boiled with equal quantity of Milk, | curdled at the point of boiling, and separated perfectly. |

3. Mons. DE PAGE's Travels Transf. vol. 3. 1792.

In order to ascertain the effects of tepid and warm bathing upon the body when in health, I made the following Experiments on Mr. Dyason, the proprietor and conductor of the warm baths at Ramsgate, August 5th and 12th, 1796 :

Air in the shade 74° . Sea-water in covered bath 68° .

Heat of the body before the Experiments 92° , Pulse 56 in a minute.

1. In a bath at 75° , after 5 minutes, Heat of the body 82° , Pulse 60.
2. The bath at 80° , after 5 minutes, Heat of the body 84° , Pulse 68.
3. The bath at 85° , after 5 minutes, Heat of the body 88° , Pulse 68.
4. The bath at 90° , after 5 minutes, Heat of the body 88° , Pulse 64.

The first of these baths felt and acted as a cold bath, and accordingly lowered the heat of the body and quickened the pulse. As the water was made warmer, the heat of his body increased; but even when at 90° , it did not regain the degree of heat observed before the immersion.

August

August 12th.—The heat of his body 90° ,
Pulse 56 in a minute.

1. Bath heated to 95° , after 5 minutes, Heat
of body 92° , Pulse 56.
2. Bath at 100° , after 5 minutes, Heat of
body 92° , Pulse 64.
3. Bath at 110° , after 5 minutes, Heat of
body 96° , Pulse 100, full and strong.

He felt himself at this degree of heat perfectly easy and comfortable, and could readily have fallen asleep, not perceiving the smallest uneasiness of any kind ; he sweated profusely in his head and face, which continued all the time he was dressing ; nor did he feel any inconvenience in the course of the day. After being out of the bath, 15 minutes, being then dressed, the heat of his body was 98° , pulse 80, full and strong, which was 24 strokes above the natural.

In a bath at 96° , I have not known any perspiration ensue, either in the water or afterwards. Persons afflicted with palsey, who have used it as high as 112° , have not perceived this effect.

Although

Although the effect of cold sea-bathing is not uniform, even in the same person, yet the following Experiments may give some idea of its immediate action upon the body :

August 16, at 7 A. M. Thermometer in the Shade 60°, In the Sea at 5 feet depth 60°. Wind N. E. fresh breeze, the sea rough.

A Gentleman in health, aged 26, accustomed to bathe ; his Heat of body 88°, Pulse 72 in a minute ; plunged into the sea, and immediately on coming out, his Heat was 76°, Pulse 120, small and depressed. When dressed, 15 minutes after coming out, feeling warm, the heat of his body was 74°, pulse 96 in a minute. He observes, that when he takes one plunge and comes out instantly, he is warm ; but when he stays longer in the water, it is some minutes before the glow comes on.

August 22d.—I repeated the Experiment on the same person.—The morning fine, at 7 o'clock, Wind N. W. moderate. Thermometer in the Shade 66°, In the Water 64°,

Heat

Heat of his body 89° , Pulse 72 in a minute. After coming out, Heat 70° , Pulse 120, weak and fluttering. Fifteen minutes after, his Heat was 88° , Pulse 80, firm and steady. This time he took three dips, and on coming out felt warm and glowing. Being in the habit of bathing every year, his mind was not in the smallest degree agitated.

APPENDIX.

RAMSGATE is a clean pleafant village, situated in the bosom of the cliff, on the South-eaft side of the Isle of Thanet in the county of Kent; eighteen miles from Canterbury, and feventy-four diſtant from the metropolis. The Pier has been formed at a great expence; and whether conſidered for the excellency of its ſtructure or the incalculable benefit it is of to commerce, is unequalled in England, perhaps in Europe. It extends in a curved line about ſix hundred and六十 yards, and being much frequented in the ſeafon, the company may be faid literally to walk in the ſea. The bathing here is perfectly ſafe and convenient; being ſecured from any nuisance iſſuing from the town by the projection of the pier; and lately, great improvements have been made at the bathing ground, which add much to the accommodation of the company.

Warm baths are here conſtructed of diſferent ſizes upon an excellent plan, neat, clean

clean and commodious : they are attended by the proprietor and his family, in a manner that gives general satisfaction to their numerous visitors. This tribute is due to industry, accompanied with constant civility.

The water upon the sea-coast is seldom good, partaking of sea-salt and lime-stone ; but there are pumps of pure and good water, especially in the upper part of the town, that are fit for every use : of this I may be allowed to judge with some confidence, having drank scarcely any other liquor for many years.

The new buildings on the east and west cliff are pleasantly situated, especially the former called Albion Place, built on an eminence immediately over the bathing place, in the form of half a square cut diagonally. The situation and views are superior to any I have seen, with the exception perhaps, of some part of Mount Edgecumbe in Devonshire. In the foreground of this extensive picture is seen the harbour with the shipping ; the Pier, the open sea, generally covered with vessels of every description, conveying the commerce, or maintaining the dignity of this country.

At

At the distance of seven miles stretches the Goodwin Sands, those tremendous shoals which in stormy weather make the spectators shudder for the safety of the adventurous mariners. To the right we view that part of Thanet leading to Pigwell Bay; the high cultivated land of East Kent, terminated by the town of Deal, and the road called the Downs, where more or less of a fleet is always riding at anchor, especially in these times of war and tumult.

The whole of this scene is bounded by a distinct, although fortunately, a distant view of the coast of France, softened down by the intervention of thirty miles of atmosphere, it is left therefore to the mind's eye to perceive the atrocious deeds of a people DIVESTED OF RELIGION, AND EMANCIPATED FROM LAW¹.

¹ Long, very long! may their pernicious principles be kept at an equal distance with their polluted soil; that this kingdom, happily surrounded with her watery zone, strong by internal peace, equity, and justice, may remain free from the calamities that have deluged with blood the neighbouring nations; secure in her invincible navy, the glory of Britain, the envy and wonder of the world!

The Isle of Thanet open and unenclosed, consists chiefly of chalk covered by a thin stratum of mold, not very rich. The inhabitants, many of whom are a remnant of that respectable body of men the Yeomanry of England, have an excellent method of agriculture, clean, and peculiarly neat; and although the appearance of the land is not of great promise, yet, by their judicious management with sea weed and sand mixed in their composts, it produces abundant and fruitful crops. From the nature of the soil, I am disposed to think the air will be found to many constitutions very salubrious, the chalk rendering the atmosphere more pure and free from phlogiston. Perhaps, after perusing the following relation of a very singular fact, the reader may be of the same opinion.

A gentleman of undoubted veracity informed me, that labouring under a very severe attack of spasmodic asthma, in the month of August when the weather was very warm, being in the neighbourhood of Park Place near Henly, he was supported by a friend into the gardens; and, to avoid the heat, went into a subterranean

passage cut through a hill, composed entirely of chalk and flints². He had not advanced many yards when he perceived his difficulty of breathing considerably relieved, and very soon to be entirely free and well, so that he ran backwards and forwards as in perfect health. After continuing there as long as his convenience permitted, he left the place ; but had scarcely reached his horses, when he breathed with as much difficulty as before. He experienced a similar effect, but in a less degree, when sitting in a cave cut out of the chalk bank at Ingerest in Kent.

Being very solicitous to discover from what property in the air this singular relief had been produced, I went down to Park Place, and exposed a thermometer, an hygrometer, and electrical balls in the passage, but without material information. I brought

² The passage is 170 yards in length, seven feet high, and five feet wide. The thickness of the hill, above the centre, 22 yards ; the direction nearly North and South, the North end elevated. I examined it in December, when the thermometer in the open air was 38°, and in the centre of the passage 43°.—Vide Essay on Phthisis Pulmonalis, 3d Edit. 1798. p. 32.

up a bottleful of the air secured in the best manner, which was submitted, as also the air from the cave at Inquest, to various tests, without discovering any difference between them and common atmospheric air ³.

Some satisfaction I received from my journey, in observing, that the gardener who attended me was troubled with a humoral asthma, and he owned that he breathed better in the underground passage, than in the open air; and this upon going out and returning several times, in order to be convinced the relief was real and not imaginary. This man's complaint was of the humoral or moist kind, with cough and copious expectoration, therefore he did not receive so much benefit as in the case of spasmodic asthma mentioned before.

I have submitted these facts to the reader's consideration, without any reasoning or comment; and shall only observe,

³ Bad and good air, sent from a distance, shew no difference from common air.—PRIESTLEY, Vol. iv. p. 169.

that

that the quality of the air, whatever it might be, was evidently connected with the nature of the soil; and it may be presumed, that a great mass of chalk will have an influence on the surrounding atmosphere.

THE END.



